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ORIGINAL ARTICLES.

ROENTGEN'S DISCOVERY.

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PROBABLY never before has the entire scientific world been simultaneously aroused to such a pitch of excitement as that caused by the recent remarkable discovery of Professor Röntgen, of Würzburg, that it is possible to produce photographic effects through opaque substances such as wood, ebonite, flesh, and similar dense materials, while glass, which we customarily regard as the most transparent of media, obstructs the passage of the cathodal ray.

If we speak of light as that portion of radiation which is capable of affecting the eye, the new agent, or the X-ray, as the discoverer calls them, is certainly not light, and "photographic" is evidently not the word to apply to the effects produced.

As it seems probable that this exhibition of energy is either a form of radiation or is intimately related to it, the term *radiography* might with propriety be applied to the process of producing the impressions.

The earlier reports from abroad indicated that the use of two induction coils were necessary, the secondary of one be connected with the primary of the other, and that a Crookes' "radianc matter" tube be connected with the secondary of the latter. As glass proved comparatively opaque it was deemed advisable to have a small aluminum window in the tube through which the rays could more easily pass. Later experiments, however, prove conclusively that these refinements are not needed, though without them a much longer exposure—perhaps an hour or more—is required. A single induction coil run by a few storage cells will excite an ordinary Crookes' tube quite enough to produce most of the results yet published. The induction coil in its ordinary form is familiar to every practitioner. A much larger coil is needed than is used for physiological stimulation, that which is being used in the experiments at the physical laboratory of the University of Pennsylvania being about 12 inches long and $4\frac{1}{2}$ inches in diameter. It was constructed by Apps,

of London, and possesses a primary resistance of about 0.3 ohm and a secondary resistance of about 3,200 ohms. The Crookes' tube represents as complete a vacuum as it is possible to obtain, and is supposed to have an interior pressure of about one-millionth of an atmosphere. The negative electrode from which the X-rays start is an aluminum disc about a half-inch in diameter. With the apparatus at present used by the writer an exposure of an hour or more was allowed. An ordinary photographic camera is used, having an aluminum shutter, which remains closed. The sensitive plates are entirely enclosed in the photo-holder, which is placed about five inches from the end of the Crookes' tube, in a horizontal position on the table. The subject to be *radiographed* is placed on the cover of the plate holder. The plates are developed and fixed in the usual manner. Radiograms to any extent may be printed upon any sensitized paper.

ROENTGEN'S DISCOVERY—ITS APPLICATION IN MEDICINE.

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RÖNTGEN'S weird and wonderful discovery is destined to enrich medicine with possibly the most valuable diagnostic process which recent years have witnessed. Within a month from Röntgen's first announcement sufficient experiments have confirmed the value of his discovery and have pointed toward applications which, though yet unachieved, only await a development of details similar to that which converted Daguerre's slow, faint and uncertain methods into the instantaneous and brilliant photography of the present day.

In brief, Röntgen has found that the electrical current passed through a Ruhmkorff coil and thence to a Crookes' vacuum-tube, develops from the cathode an invisible form of energy, having the double property of penetrating certain ordinarily opaque substances, and of affecting an ordinary photographic plate. Flesh, for instance, is translucent to these rays, and bone and metal, glass and graphite, are comparatively impervious. On this difference in penetrability depends the

effects which are permanently recorded by ordinary photographic plates. Perfect clearness of definition has not yet been attained. It will be convenient to coin the words skiagraph or skotograph to characterize pictures produced by the X-rays and to indicate at once their relationship to and their distinction from photographs.

The surgical imagination can pleasurabley lose itself in devising endless applications of this wonderful process. If it becomes possible to drive these mysterious rays through the entire body as clearly as they now penetrate the hand, the realm of utility will be practically boundless. It is stated that stone in the kidney has already been determined, and the opacity of glass has led to the detection of small pieces adherent to bone after accident. The similar opacity of lead may render the probe useless in gunshot wounds, except in rare cases as when the bullet is buried in the bone. A new means of distinguishing luxations from fractures is now added to the long list at our command. Obstetricians will readily perceive the immense value of ability to *see* the fetus in utero after ossification of its bones has occurred. The representation of deformed pelvis in the living subject, of spondylolisthesis, of calcareous infiltration of various parts, such as arteries, and of exostosis—all this opens up a tempting and promising field for practical research.

Incredible as all this may seem the original skiagraphs photographically reproduced in the annexed plate will convince the most doubting.

The plate¹ shows a number of objects which I have selected at random. In Fig. 1 is represented a portion of the small intestine containing mucus and fecal matter. In this have been placed a penny, a lead pencil, and a gall-stone. The penny is markedly distinct, the lead of the pencil is plainly visible, while the paint of the pencil, rather than the wood itself, has given the outline seen in the cut. The shadow of the irregular gall-stone can be seen. The photographic plate on which this impression was obtained was wrapped in three thicknesses of paper; and in order to distinguish the film-side of the plate, a mark was made in the centre with a lead pencil, and this is also seen in the figure. Fig. 2 shows a portion of a fresh cirrhotic liver, one centimetre in thickness, in the centre of which a number of pins had been inserted. Fig. 3 represents a rib covered over in its central portion with a section of cirrhotic liver tissue, one centimetre in thickness. The blade of the penknife in Fig. 4 was covered with fresh lung tissue, two and

three-quarter centimetres in thickness. It would seem that the closer the object is to the plate, the more successful the exposure. Hence it is that some of the objects which have been taken present an appearance not so distinct as the others.

Fig. 5 shows a hand with polydactyly and webbed fingers.

Fig. 6 an ankylosed bone.

Fig. 7 a bullet and piece of glass in a hand preserved in alcohol.

It may be noted that the skiagraphs herewith presented are the results of preliminary experiments. They will be continued by the writer in the physical laboratory of the University of Pennsylvania, through the kindness and courtesy of Professor Goodspeed, to whom is due the honor of being the first in Philadelphia to repeat Professor Röntgen's experiments. It is confidently hoped that the time of exposure will be shortened and the penetration of the rays increased. It will be comparatively easy to obtain pictures of acromegaly, osteitis deformans, gouty deformities, rheumatoid arthritis, etc. Especial attention will be given to the differentiation between organic and inorganic substances, and between those tissues in the human body which react and those which do not.

The easy application of Röntgen's method of taking a picture on a sensitized plate renders its use at once possible in hospitals. The entire cost of such an apparatus need not exceed \$50, and this amount will shortly be materially diminished. Doubtless the scientific and commercial ingenuity now being focussed on this process will soon produce outfits at once simple, convenient, and portable, and it is safe to say that most practitioners will then provide themselves with the means of seeing into the mysterious recesses of the body now accessible only by means of the knife.

ROENTGEN PHOTOGRAPHS AND SOME INTERESTING FEATURES OF THE DISCOVERY.

WE append herewith two Röntgen photographs taken from *Nature*, January 23d. They are photographs of living hands, and the difference in the two is due simply to the greater intensity of the light. In the first one the flesh of the hand becomes almost invisible, while in the second the contour of the hand and fingers is retained.

In our interest and enthusiasm in this matter, it is well not to lose sight of the fact that there were men who understood this process before Professor Röntgen published his recent article upon the subject. The wonderful penetrating powers of these rays were already known and had

¹Opposite page 169

been noted by Hertz, while Lenard, two years ago, had obtained by means of Crookes' tubes shadow photographs similar to those of Röntgen. The feature that is peculiar to Professor Röntgen's discovery and which has so stirred the public interest, and particularly that of the medical profession is that bone is impenetrable to these rays, while the flesh is not, and therefore it is possible to get a shadow picture of the bony structure, not only of the hand, but other parts of the body, by passing these rays through the flesh.

Professor Wright, of Yale, has obtained shadow pictures of the entire skeleton of a rabbit, showing that the rays will pass, not only through the flesh, but also the fur of an animal.



Photograph of the bones in the fingers of a living human hand. The third finger has a ring upon it. [From *Nature*, London.]

Already improvements in method and other discoveries as to the properties of these rays are being made. The opinion of some of the best experimentors is that these rays can be produced in the ordinary electric light bulb. Indeed, the characteristic fluorescence of the cathodal rays has been obtained upon a sensitive plate without the use of Crookes' tube, and it is therefore quite within the realm of possibility that shadow pictures may be obtained in the same way. The length of time necessary to procure a picture by exposure to these rays is also being constantly reduced, from several hours, which was the period originally deemed necessary, to forty, twenty, and even four minutes. The time is doubtless not far off when, as Dr. Cattell has suggested, instantaneous pictures will be taken by this method.

A peculiar feature of these rays is that, although they are capable of producing a brilliant fluorescence by coming in contact with a sensitized

plate, they are not visible to the human eye. Even when interposed in the direct path of the rays, the eye is not cognizant of any effect, either of light, or heat, or pain.

We would also call attention to the telegraphic



Photograph of a living human hand. [From *Nature*, London.]

communication in another column of Dr. A. Lapthorn Smith, which probably records the first instance, in this country at least, in which this process has been practically utilized in surgery to locate a bullet lodged in the flesh.—[ED.]

SHALL THE STATE UNDERTAKE TO RESTRICT THE SPREAD OF TUBERCULOSIS?

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FOURTEEN years have passed since Koch announced the discovery that a specific bacillus is the primary cause of tuberculosis, and demon-

¹Read before the New York State Medical Society, at Albany, N. Y., January 28, 1896.

strated that the disease could be reproduced in susceptible animals. To many careful students who had observed accurately the history of the disease, this announcement came, not as a matter of surprise, but as a confirmation of theoretical conjecture, based on strong reasoning and experimental work with tubercular tissue. These received gladly Koch's communications on the subject, and, in their laboratories, duplicated his methods, reproduced his results, and confirmed the correctness of his deductions. In a short period of time the objection that the characteristic bacillus, admittedly found in all tubercular tissues and in their discharges, was not the cause of the disease, but the incidental accompaniment of it, was silenced by the contemporaneous evidence of experimental observers of all nations.

In a similar way the infectious nature of the virus has been established beyond a peradventure, so that it was long ago proven that tuberculosis is reproduced in susceptible subjects, not only by experimental inoculations, but as readily by the direct inoculation of an unprotected surface by unsought contact with matter containing the specific germ. The investigations of the dust of consumptives' wards in hospitals, of houses in which tubercular patients had dwelt, of churches and theatres and schools and public conveyances which had been frequented and contaminated by those having tuberculosis, have established the fact that the process of drying does not kill the germ, and that after lying dormant for months they are capable of active reproduction, and of initiating the disease of which they are the cause. In the investigation of food supplies from tubercular animals, the same results have been attained, and have been so thoroughly established that our State and many others are now prosecuting a crusade against tubercular domestic animals, for the protection of mankind from this one source of infection.

All these facts have been known to the profession for many years, and for as many years there has been no one to raise a voice against them. Indeed, the younger physicians have been so educated that to them any other possible cause for consumption or for its distribution is known only as a matter of ancient history. But when we search for results springing from this discovery, at all commensurate with its greatness, we are met with disappointment and surprise. By State control leprosy has been banished from civilized nations, smallpox has been robbed of its sting of death, scarlet fever and diphtheria have been limited in their spread, but tuberculosis, with its

multiform manifestations, still claims one-fourth of all the deaths for its own. From the forthcoming report for the year, 1895, Dr. Smelzer, the Secretary of the New York State Board of Health, has kindly furnished me these statements:

"The total reported deaths from consumption in our State for 1895 is 13,330. The average reported deaths annually for the past ten years is 12,616." That these statements do not indicate in full the actual deaths from tubercular diseases we all know perfectly well, so that these figures, as appalling as they are, in order to represent the true conditions, must be materially augmented. That such an annual sacrifice of life on the altar of tuberculosis is necessary, not one of us believes.

Modern science teaches that tuberculosis is rarely hereditary, almost always communicated, and, if not preventable, it is at least capable of very great restriction. These ideas are prevalent the world over, and in the most enlightened communities are receiving attention. Our own State Board of Health, though behind others in this respect, has not been unmindful of the importance of this subject. In November, 1894, it formulated a circular letter to be sent to the Health Officers of the State, setting forth the facts here briefly mentioned, requesting the coöperation of physicians in reporting cases of tuberculosis, and suggesting that it might be wise to distribute to those families in which tuberculosis exists information as to how the disease is communicated and what precautions should be observed. Such action is but preliminary, and is not sufficient. Any action on the part of the State Board of Health must have the hearty coöperation of the great body of intelligent physicians, whose representatives are here assembled, and any action to be efficient must be mandatory, not advisory.

From the absolute knowledge in our possession that the infectious material in tuberculosis resides wholly in the secretions from the part affected, it seems possible to restrict the propagation of this disease with more certainty and with less inconvenience to the afflicted and their friends than in any other infectious disease. To secure such restriction, a campaign of education of the people must be inaugurated. The people must be taught the nature of this disease, the methods of its propagation, and the means that must be employed to control it. For this purpose perhaps no plan that has been proposed is superior to that which has been adopted by the State Board of Health of Michigan, and which, in other diseases, has proved

to be of such absolute value for the past twenty years. By this plan it is obligatory upon every physician and every householder to report to the local Health Board every case of tuberculosis. To each patient, and to his friends, and to those who come in contact with him, is sent a circular of information setting forth in simple terms all of the facts concerning the nature, communicability, and necessary preventative measures to be observed to protect himself and his friends from the further spread of the disease.

To secure a universal dissemination of accurate information concerning zymotic diseases, the State of Michigan has within the last year made it obligatory to teach all pupils in the public schools the fundamental facts and practical methods of sanitation in all known infectious diseases. In reply to a letter of inquiry concerning the practical workings of the methods so far adopted, Dr. Baker, Secretary of the State Board of Health of Michigan, says: "Though it is too early to show by statistics the result of this plan, it is noticeable that many people have been set to thinking on this subject, and much interest has been manifested." In one of his able addresses on "Consumption as a Disease Dangerous to Mankind," he states facts "which seem to warrant the hope that the restriction of consumption will prove easier than the restriction of scarlet fever," and on a previous page he has proved by statistics that, since the adoption of this plan in 1874, "The death rate from scarlet fever in Michigan was less than one-half what it had been previous to the beginning of the work."

The campaign of education involves more than the necessary instruction directed to the patient and to his immediate friends, and more than the instruction of the children of this generation. It must extend to all municipalities, to all organizations possessing public halls, to all public passenger carriers, to all architects. A person recently returned from Colorado said: "The streets are fairly slippery from the expectorations of consumptives who are there for their health." We have known a previously healthy person to return from a visit to Colorado with consumption, a symptom of which neither he nor any of his family ever before presented. Dr. Ghion, the late Medical Director of the U. S. Army, said that he was never in such constant fear for his life, not even in the midst of an epidemic of yellow fever, as he was on a journey from New York to Florida by steamer, in a throng of expectorating consumptives going South "for their health." Public buildings must be treated as

infected places and cared for as such. Heating and ventilation of such halls must be so carried out as to minimize the possibility of inhalations of dried sputum. Public carriers, like street cars, and steamers, and railroad companies, must be induced to prevent expectoration upon the floor; and such a course is very easy of accomplishment, and far more important to the comfort of the passengers than the regulation of smoking. It is to the credit of some street car companies in certain cities that a prominently-placed placard announces that "Spitting on the floor is not allowed." The inculcation of such instruction, widely disseminated, will make unnecessary the methods employed in some German cities, of placing at convenient intervals on the streets public cuspidors with their unsightly contents. Every one should be taught to protect the public from the discharges from his mouth, as he has been taught from infancy to control the excretions.

That there are difficulties in the way of attaining perfect control of those having tubercular discharges is self-evident. It is to the very fact that the difficulties are so great that the apathy of the profession is to be charged. It may be well to review some of the difficulties that must be surmounted. First of all, what have we, as physicians, to overcome in our own ranks? We are the descendants of our fathers, and have inherited a dislike of telling disagreeable truths. In earlier days, to tell a person he had tuberculosis, or consumption, was equivalent to pronouncing a death sentence. We are not yet free from this thralldom, though we know perfectly well that modern statistics can show a recovery of 50 per cent. of cases detected early. A competent physical examination is often not insisted upon. A bacteriological examination of sputum, in those early cases where little but malaise is complained of, and where physical exploration fails to reveal the first beginnings of the disease process, is very frequently neglected. Often when the symptoms are unmistakable, even to the friends, the doctor yields to the importunities of the family and makes them comfortable by an offhand diagnosis of "bronchial trouble" and omits all hints of danger to any one else. Many object to reporting cases of tuberculosis on the ground that they are unwilling to brand a man as a consumptive and thus blight his life in the community in which he lives. Thus, in our own ranks we must overcome errors that are directly traceable to carelessness and sentimentality.

Among the intelligent people there is little to overcome save pardonable ignorance. Con-

sumption is so very common that the people feel at home with it. It is considered a terrible affliction, but one so often observed that familiarity with it has bred more than pity.

The intelligent people need but this specific education. They need but to know that this fell destroyer is capable of control, that to control it it is but necessary to destroy the virus contained wholly in the discharges from the diseased organ, and the assurance that, in its control, the loved victim need suffer no curtailment of his inherent rights, no diminution of their tender care, and that in a careful observation of sanitary regulations, he is not only protecting them, but is, by so much, making his own cure the more possible. And they need to realize the necessity of an early and accurate diagnosis, and the danger of neglecting the first beginning signs of enfeeblement.

With the ignorant poor, and the wilfully careless and the vicious, the case is not so simple. Because of the greater difficulty in educating these classes, it is a question if it would not be wise at the start to empower health boards to isolate, in specially adapted hospitals, such as will not or cannot conform to the regulations for home care. That certainly will come in time, for, as soon as a public sentiment in favor of the restriction of infectious diseases is firmly established, just so soon will the people force those put in charge of the public health to compel an observance of sanitary laws on the part of the wilful and the ignorant.

If we are profoundly convinced of the possibility of restricting the ravages of this scourge of mankind, shall we escape deserved censure for not making a vigorous effort, because there are difficulties in the way?

No timid, half-hearted, apologetic and advisory action will ever win the coöperation of the profession and the respect of the people. But if the plain facts are vigorously stated, that tuberculosis is a curable disease, a contagious disease, and a preventable disease, and that with the coöperation of the people of the State, every one of whom is vitally interested, the number of cases can be diminished 50 per cent. in ten years—as is firmly believed—I predict that we should have such strong support from the more intelligent of our citizens that the ignorant and the vicious would be speedily compelled to conform to the prescribed sanitary regulations.

To summarize, the following conclusions may be drawn:

1. Tuberculosis is an infectious and curable disease, capable of restriction.

2. That the State should compel the registration of every case of tubercular disease.

3. That circulars of information as to the nature, communicability, and sanitary care of all tubercular disease should be sent to those afflicted with the disease, and to those attending them.

4. That instruction as to the nature of contagious and infectious diseases, and the practical methods for their control should be given to all senior pupils in public grammar schools.

5. That all owners and trustees of places of public entertainment, including churches and schools, and all public carriers should be required to prevent contamination of their halls and conveyances, and to disinfect them when contaminated.

6. That the hopelessly ignorant, wilfully careless and vicious afflicted with tuberculosis should be isolated in special hospitals provided by the State.

THE TREATMENT OF MALIGNANT TUMORS IN SO-CALLED CANCER CURE INSTITUTIONS.¹

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It is rather my purpose in this paper to invite a discussion upon the subject of what is claimed for and accomplished in the so-called "cancer cure" institutions, than to enter widely upon its consideration. It is known to all, that people afflicted with what is, or what they are told is malignant disease, seek relief from their afflictions at the hands of these "cancer specialists," both because of their fear of the knife, and the glowing promises made for their certain cure by escharotics. The claims of these cancer hospitals are set forth in very seductive language and the most positive assurance is given that their method, and only their method, can effect a permanent cure.

While not aiming a blow at any single institution—as my intent is rather to discuss methods and results—my attention has been particularly directed to the work done in one of them, and I assume that this work is the type of all.

In the pamphlets issued by this and similar institutions, it is stated in vigorous language, that the knife fails to cure more than ninety-five per cent. of the cases operated; that the only argument in favor of operation upon cancer of the breast, for example, is that it can be done in from one to three hours, and the wound healed in from

¹ Read before the New York State Medical Society, January 28, 1896.

two to four weeks. But in the same breath we are assured that such a procedure is certain to witness a return of the disease in worse form, and that the arm on the diseased side is sure to be impaired and in many instances rendered entirely useless.

It is further stated that the entire profession recognizes the inability of the knife to remove the disease, and hence recommends operation, only as a last resort. Moreover, the most serious objection to removal of the breast by operative measures, we are told, is that the surgeon is unable to determine, be he ever so skillful, whether or not he has removed the last vestige of the disease, while the escharotic method entirely circumscribes the mass, protects the healthy parts from further invasion, and when the slough has separated there remains a granulating wound so absolutely bloodless that one is enabled to determine what portion, if any, of the disease still remains. We are further informed that if any cancer cells exist, they positively stare you in the face, and that they can be at once removed by this same method. It appears furthermore, that the particular remedies applied are of secondary importance, and that the value of the treatment lies in this ability to determine whether or not the disease has been removed, and only their particular method renders this possible.

The claim is further set up that no other known method is as painless, and produces so little inconvenience; that the pain is never severe enough to prevent sleep, nor to confine the individual to her room.

It is asserted by one of these institutions, that up to the present time, there never has been a failure to effect a permanent cure in any case in which their physicians were able to give a favorable opinion. To use their own statement, "We can truthfully say, that we never fail to cure any case of cancer, where we have had and accepted the first opportunity for treatment," and this is from the institution of which we will hear more in detail. In a circular at hand, we learn that more than three-quarters of all physicians and surgeons in good standing in the United States, indorse their method. The serious charge is made that the surgeon is aware of his inability to cure this disease, and that for mere pecuniary gain and absolutely for no other reason, he performs an operation, knowing full well that it cannot prolong life, but in reality shortens it, as the disease is certain to progress more rapidly after than before operation.

What these "cancer specialists" designate as

cancer and treat as such, is perhaps summarized best in one of their published statements, which I quote verbatim: "Nearly all those lumps and kernels that appear on or in the breast, and all those sores, lumps, or unnatural appearances in the form of crusts, warty excrescences, which occur in either sex, but far more commonly in the male, on the lip, nose, eyelids, face or any part of the surface, are cancers, and should have immediate attention. The only symptoms for months, and in many cases for years, are occasionally a stinging, shooting, burning, itching or creeping sensation, and in many cases not even any of these. If you have a branny, scaly, crusty or warty appearance, with an occasional exfoliation of the same upon the face, lip, nose, or any other portion of the skin, attended with any of the above symptoms, or giving an occasional sensation as though a fly had alighted upon the part, or a hair were tickling it, the evidence, should be conclusive that your trouble is cancer, and no delay should be made in having it cured. Life is far too valuable to be tampered with or sacrificed."

We are assured that the time required for the cure of these cases by escharotics is quite brief. The enticing statement is made in a pamphlet issued by an institution, whose work I shall presently analyze, that by recent improvements in their method, they are enabled to shorten the stay of their patients, so that for cancer of the breast, even though extensive, three to five weeks suffices, and in the less severe cases the period is proportionately shorter. In another institution, as low a period as two weeks is given. Each case, however, can be and is told approximately, how long a time will be required to effect a cure, after the preliminary examination has been made.

Unfortunately, many of these institutions are in the hands, not of ignorant, uneducated pretenders, but men who have been liberally educated in the arts and are graduates of recognized medical schools.

My attention was particularly called to this subject by the treatment a lady who had previously been under my care received in what is claimed to be the largest and most successful of the sanitaria for the cure of cancer in the United States. Certain it is, this institution in the printed circulars it issues, makes the most extravagant representations as to the simplicity, painlessness, brevity, and efficiency of the treatment.

To place in bold relief, however, the actual condition of things as opposed to the false and untenable positions taken by the so-called "can-

cer specialists," allow me to present to you not only the history of this patient, but also what was unearthed during her stay in this cancer hospital.

Mrs. A. consulted me November, 1891, when I found present in the outer upper quadrant of her left breast a movable, hard, nodular tumor, which presented the usual appearances of scirrhus. I urged amputation of the breast. She was fearful of the knife and would not consent. For a year I had her under observation, during which time the growth made very slow progress, remaining freely movable, excepting as it grew toward the surface, where it became quite adherent to the skin. However, it could be entirely circumscribed, and at no point was it attached to the chest wall. There were no glandular enlargements recognizable in the axilla. The continued presence of the tumor and the diagnosis given naturally alarmed her, and without seeking further medical advice, she placed herself in a widely known "cancer institution."

She entered it September 19, 1893, and was assured that her case was a promising one and that a cure was certain. Fourteen months of treatment—I might more truthfully say of torture—were spent here. Her husband states that the first application was made at 10 o'clock in the morning, and that until 4:30 in the afternoon she was almost wild. The application was repeated on three consecutive days, and afterward every three to four weeks, during the period of her stay. Widespread sloughing resulted. She became steadily more emaciated and enfeebled until, on the 10th of October, 1894, she was obliged to take to her bed, and then was told she had pneumonia. On the night of November 5, 1894, she was carried out of the "sanitarium," placed upon a train, and transported home. On leaving the institution, her medical attendants declared that there was no trace of the malignant disease left, that she was entirely clear of every vestige of cancer.

I saw her on November 11, 1894. Her pulse was so feeble that I could scarcely feel it; the respirations were 24 and the temperature 99.

At the previous site of the left breast, instead of a mamma, there was extensive scar tissue. Midway between the mammary and axillary lines, on a level with the third rib, there was an unhealed area. This side of the chest presented patches of dullness. There were no râles and but a small amount of air entered the lung. The entire right lung was likewise infiltrated, presented no râles, but only admitted a small amount of air. From this date she gradually failed until she faded out, December 14, 1894.

After death, as she was placed in the recumbent posture, a position she could not fully assume during life, a large amount of serum poured out of the chest, through the unhealed area on the left side which opened directly through the chest wall

into the left pleural cavity. Pleural adhesions existed on all sides. Each pleural cavity contained serum. The left lung was filled with small secondary deposits, but at no place was there direct extension inward, from the surface, nor was there any involvement of the ribs. The right lung was very much contracted, solidified here and there, and saturated with secondary growths, varying from one-half to three-quarters of an inch in size. The heart wall was thin and flabby. There was no evidence of secondary involvement of any other organ.

While at the institution, her husband had been her constant attendant. He became well acquainted with the various inmates, and as a matter of personal interest, formulated a table which records the names of all the inmates of the institution, at the date of admission of his wife, i.e., September 19, 1893. His table notes the residence, the respective age, sex, date of admission and dismissal of the various patients, the site at which the disease was located and the ultimate termination of the various cases.

Let me present to you these statistics. Whether they are better or worse than we could obtain from the same institution at other times, or whether this tabulated statement tells the full truth for all time, I cannot say. Certain it is that these "cancer specialists" do not publish their statistics and that it is rarely we can ever obtain exact information concerning them.

To avoid any legal entanglement, as I am not desirous of courting a lawsuit, I do not mention the name of the institution. I can assure you, however, that my statistics are absolutely trustworthy and that they are presented as furnished me.

It appears that there were twenty-six patients in the "hospital" September 19, 1893. These are classified in four groups. The first contains ten cases of cancer of the breast and includes my patient. All of these had been subjected to the treatment and each one of the others was dead when my patient passed away, December 14, 1894. One of these after a period of treatment of five and a half months died in the institution. Another lived ten days after her dismissal; still another died in four weeks, my patient in six weeks, and yet another in two months. None lived longer than nine months. One of these was under treatment in this institution for a period of one and a half months, one four and a half, one five and a half, and the remainder from nine to fourteen months, with an average of eight months for the ten.

In the next group are placed six cases who were under treatment for periods of five months, seven and a half months, eleven, twelve and fourteen months, respectively, with an average of ten months, and who after this prolonged period of torture were finally pronounced hopeless and sent home to die. How many of these are dead I cannot state, inasmuch as their cases have not been followed up. In this class the breast was involved twice, the uterus once, and likewise once, each, the eyelid, lip and face.

In the third series were eight cases indicated as not having recovered. Of these, four were of the breast and four were epithelioma of the face, one being described as being the size of a "hazelnut," the second of a "bean," the third as "trifling," and the fourth involving the face and nose, and is

To summarize then: Of the twenty-six patients, ten were dead at the time the cases were tabulated, six were pronounced hopeless, three more had the cancer recur and seven believed themselves to be cured. Among the latter, four certainly were very trifling affairs. Whether all of these were positively cancerous, there is grave question, and whether all so indicated and not heard from have remained free from recurrence I cannot state. But were we to concede that they all were cancers and that none had recurred, the results still make a frightfully bad showing.

When we compare these results with the fair promises held out by these institutions of the certainty of cure, where the patients are accepted for treatment and assured that their cases are favorable for escharotic treatment, it becomes at

PATIENTS UNDER TREATMENT, SEPTEMBER 19, 1893.

Name.	Residence.	Age.	Sex.	Admitted.	Dismissed.	Site.	Died.	Remarks.
Mrs. M. A. J.,	Philadelphia, Pa.	72	Female.	June, 1893.	April 10, 1894.	Breast.	April 20, 1894.	
Mrs. J. K. C.,	Iowa.	50	Female.	March 22, 1893.	Dec. 18, 1893.	Breast.	August, 1894.	
Mrs. R.,	Ohio. [Can.	50	Female.	March 1, 1893.	Jan. 19, 1894.	Breast.	Sept. 1894.	
Mrs. E.,	Sussex Corners,	62	Female.	Jan., 1893.	Feb. 20, 1894.	Breast.	April 15, 1894.	
Mrs. R.,	Boston, Mass.	45	Female.	July, 1893.			Nov. 16, 1893.	
Mrs. K.,	Whitten, Iowa.	53	Female.	June, 1893.	Dec. 4, 1894.	Breast.	May, 1894.	
Mr. W.,	Washington, D.C.	70	Male.	Sept. 15, 1893.	Oct. 30, 1893.	Near nipple.	June, 1894.	
Mrs. S. A.,	Syracuse.	44	Female.	Sept. 19, 1893.	Nov. 5, 1894.	Breast.	Dec. 14, 1894.	
Mrs. J. L. I.,	Mass.	40	Female.	August 1, 1893.	Dec. 24, 1893.	Breast.	Sept. 1894.	
Mrs. D.,	Pultney, Vt.	60	Female.	(October, 1893.	March 3, 1894.	Breast.	April, 1894.	

GONE HOME TO DIE. HOPELESS.

J. D.,	Lodi, Cal.	55	Male.	July 4, 1893.	Sept. 15, 1894.	Face.		
Mr. T.,	Sacramento.	50	Male.	August, 1893.	August, 1894.	Lip.		
Mrs. B. W. F.,	Milwaukee.	60	Female.	Oct. 14, 1893.	March 3, 1894.	Womb.	Has some hope yet; trifle.	
A. Mc.,	Worcester, Mass.	52	Female.	Nov. 24, 1893.	October, 1894.	Breast.		
G. C.,	Boston, Mass.	45	Female.	April 1, 1893.	March 13, 1894.	Breast.	[quite hopeful.	
Mr. V. B.,	New York.	50	Male.	May 15, 1893.	Dec. 30, 1893.	Eye.	Again developed, but is	

NO RECURRENCE OF DISEASE.

Mrs. P.,	Nebraska.	45	Female.	July 15, 1893.	June, 1894.	Breast.		
Miss B.,	Hartford, Conn.	50	Female.	August, 1893.	Nov. 28, 1893.	Breast.	Dr. V. said would return.	
H. W.,	New Orleans.	80	Male.	Sept. 1, 1893.	March 1, 1894.	Face.	Size of a hickory-nut.	
Mrs. N.,	Mass. [N. Y.	33	Female.	August, 1893.	Dec. 30, 1893.	Breast.[nose.]		
Dr. C.,	Holland Patent,	70	Male.	July, 1893.	August, 1894.	Face and	Has again recurred.	
J. C. H.,	New Brunswick.	50	Male.	Sept. 1893.	Nov. 29, 1893.	Forehead.	Trifling.	
Mrs. B.,	Glens Falls, N. Y.	55	Female.	July, 1893.	Dec. 4, 1894.	Breast.		
Mr. W.,	Conn.	55	Male.	Sept. 1893.	Oct. 30, 1893.	Cheek.	Size of a bean.	

DOUBTFUL.

Mrs. W.,	Philadelphia, Pa.	50	Female.	Oct., 1893.	July, 1894.	Breast.		
Mr. W.,	Oswego, N. Y.	45	Male.	Oct. 5, 1893.	Feb. 21, 1894.	Nose.	Fearful of recurrence. Slight case.	

marked as having again developed. The latter, therefore, should not be included in this group, nor should one of the breast cancers, which also has given evidence of return.

The two remaining cases are classified as doubtful, inasmuch as there was fear of recurrence of one where the breast was involved, the treatment having been prolonged for a period of eight months, and the second one marked as a slight case affecting the nose, she having been an inmate of the institution for four and a half months.

once apparent what an awful misrepresentation these institutions make and how great the imposition is.

The statement, as you will recollect, is made by them that the regular profession resort to the knife simply for pecuniary gain. The husband of my patient informs me that he paid \$50 per week for the so-called treatment of his wife during the entire period of fourteen months, and this included neither her board nor room, but was simply for the so-called "professional visits" of

her medical attendants. In short, for the "professional treatment," exclusive of all other necessary expenditures in this case, the fees amounted to \$3,000.

I am informed that one of the patients in the second group, a man of very limited means, and whose home was in California, was promised a cure with two months treatment. After fourteen months the poor man turned over all the money he had except barely enough to carry him home, with the cancer of the face not only uncured, but much worse than when he entered.

It is unnecessary for me to state to this society how untruthful the charges against our profession are, how absolutely false is the statement that 95 per cent. of cancers treated by the knife do not recover; that it is impossible to reach beyond the disease with the knife in a case where it can be circumscribed; that the prospect is less favorable by operative procedure, and that, in short, all of the claims made by these so-called "cancer specialists" are absolutely unwarranted.

I have not discussed the subject from the standpoint of pretended cures for cancer when the patient has only been afflicted with an innocent tumor. That many of the so-called cures are of this kind, there can be no doubt. This is apparent in the statement quoted which defines malignant disease from the standpoint of these "cancer specialists." To make the table yield the best possible returns for them, I have conceded that all of their cases were cancer. The results are horrible enough at best.

I have inserted the table, which I believe will bear careful study.

SOME PRACTICAL POINTS CONCERNING URINALYSIS IN DIAGNOSIS. THE PART OF URIC ACID IN CERTAIN DISEASES.¹

BY G. J. TWEEDY, M.D.,
WINONA, MINN.

THERE are two theories as to the part played by the kidney in the formation of urine. The first is that of Ludwig, according to which the process is a purely physical one—partly a filtration and partly a diffusion or osmosis. The blood pressure being increased in the Malpighian tufts, the watery portion of the blood together with some dissolved salts escapes into the Malpighian capsule. In this way the blood is very much thickened by the time it reaches the second capillary network embracing the convoluted tubules, into which has descended the thin aqueous solution from the capsule. Here the thin wall of the

blood vessel together with the delicate membrane of the tubule, forms a perfect osmometer, with the dense blood on one side and the thin saline solution on the other. An interchange now takes place, by which a current of liquid sets in from the tubule to the blood, and of the products of regressive metamorphosis, urea and salts, to the tubules, concentrating the fluid in the latter, and making urine of it. The researches of Heidenhain since that time have shown, that in addition to this the convoluted tubules and looped tubes of Henle are concerned in its elaboration. It is, however, regarded as established, that the chief materials of the urine, with the exception of hippuric acid, preexist as such in the blood and are therefore merely removed by the kidney. Normal urine should be a transparent aqueous fluid of a pale lemon color, varying somewhat according to the amount of liquids ingested and the activity of the skin.

A few minutes after being passed there is usually a faint cloud of mucus derived from the genito-urinary tract. In females this cloud is apt to be more marked, in consequence of a large amount of epithelium from vagina and vulva.

The reaction of healthy mixed urine, *i. e.*, of twenty-four hours, is always acid; a few hours after a meal it may become neutral or alkaline. The cause of this change in reaction is still disputed, Roberts believing that it is due to an admixture of the blood with the elements of food, which is largely alkaline, Bence Jones contending that it is caused by the large amount of acid gastric juice which has been extracted from the blood during digestion; probably both enter into the causation.

Normal specific gravity is about 1020. When from the action of cold or other cause the skin is not acting, and after copious use of water or diuretics, it may descend to 1010 within the limits of health; but when perspiration is copious or a drain of water takes place from some other channel, the urine becomes concentrated, and may be 1030 or higher. The specific gravity is also increased in the first stage of acute fevers, in consequence of the increased amount of solid matters excreted, in the first stages of acute Bright's disease, from the presence of blood, in diabetes mellitus, from sugar. It is diminished in hysteria, in all forms of Bright's disease except the stage of acute nephritis referred to, and in the condition known as cyanotic induration of the kidney, which often attends heart disease. In a general way, the presence of sugar and albumin being eliminated, variations in the specific gravity

¹ Read before the Winona County Medical Society, January 7, 1896.

point to variations in the amount of urea present; lower specific gravity of mixed urine generally means less urea. Normal quantity may be set at about fifty ounces per day.

Now let us consider the nitrogenous products of tissue change found in urine. A great many of these are found in the blood, and but few in the urine. Cholesterin is but rarely found, and is not worth considering here. Leucin and tyrosin are found only in acute yellow atrophy of the liver, in phosphorus poisoning and in rare cases of smallpox, and on this account these crystals may be said to be almost pathognomonic. But by far the most important of this group is uric acid. The term, uric acid, will include all its combinations, urates of soda, ammonium, calcium and magnesium.

Uric acid, like urea, is a product of tissue change, and is increased by: first, excess of nitrogenous ingesta; second, most febrile conditions where tissue change is going on rapidly; third, in most wasting diseases, e.g. phthisis; fourth, in diabetes.

It may be decreased by: first, certain diseases of the liver; second, fasting; third, vegetable diet—its place being occupied altogether by hippuric acid in the herbivora.

Of much more importance, however, than its formation is its excretion. Roberts says: "It may be regarded as probable that the defective power of the kidney to eliminate uric acid in gout arises from a diminished alkalescence of the blood;" or, in other words, the uric acid is not in solution in the blood, and is never brought to the kidneys to be excreted; because uric acid is not soluble in a neutral solution, a slightly alkaline one, or an acid one. It follows on that account, that foods or drugs which render the blood more alkaline have more uric acid in solution, more is brought to the kidneys and more excreted.

The question would then naturally arise. On diminished alkalescence of blood, what becomes of the uric acid? Sir A. Garrod says, it is attracted differently by different organs, and thus the spleen and liver more frequently contain appreciable quantities than other organs, and further on, "may it not be, that, in some organs as the spleen, the substance of which, if not acid during life, rapidly becomes so after death, while the blood remains strongly alkaline, the uric acid becomes less soluble and more easily retained." Therefore on the administration of a dose of acid, the liver and spleen become more acid and cause increased retention of uric acid in them, while a

dose of alkali will diminish their acidity and sweep out the uric acid retained there.

Now I shall endeavor to show how this theory explains a number of pathological conditions. First, headaches. Allan McLane Hamilton says: "An experience of many years has taught me that uric acid poisoning is at the bottom of many functional nervous diseases as well as some organic ones. Many individuals of the gouty habit, without actual classical gout, but with a thousand and one erratic symptoms, are the subjects of headaches, which rapidly disappear when a proper alteration of habits and food is made, and when they are placed upon remedies of a suitable nature. The subjects of such headaches are often men, and more usually those past middle life, though the headache of uric acid is confined to no particular age." If we take a typical case of uric acid headache, we will usually find it to begin shortly after breakfast, continue all day with some variations in severity, and at night usually disappear. This corresponds to the time when uric acid is circulating freely in the blood. It comes on after several days of well being, wherein the patient has had a good appetite and partaken freely of meat, and has also had considerable exercise, both bodily and mentally. We now find that the commencement of the attack corresponds to the period of most marked alkalinity of the blood; this alkaline tide sweeping out the uric acid from liver and spleen, which has been stored up during the acid tide period of sleep (if I may be so allowed to call it), and which now acts as an irritant. This irritation causes contraction of blood vessels throughout the entire body; it is not unlikely then that it may produce spasm of blood vessels in certain vascular areas, especially in the pericranium, which is the accepted theory of migraine. This will readily explain the morning headache due to excesses in wine and beer the previous night.

Sir A. Garrod, in speaking of acidity, says that fresh fruits diminish acidity through conversion of their vegetable salts into carbonates; and this, I think, gives us the key to the whole matter. Wines, ales and beer may all be regarded as solutions containing a very small amount of albuminoids, a certain amount of alkaline salts and a certain amount of acid, either free or combined; and it is obvious that if the alkalies or the vegetable salts which can be converted into alkaline carbonates predominate, the beverages will act as doses of alkali, while if the acid and acid salts, incapable of conversion, predominate, they will act as doses of acid, and we get the uric acid precipitated and

retained until the blood is rendered more alkaline, and thus, from the excess in the circulation, we get headaches.

I have under observation at present a man who has suffered with headaches at intervals of two or three weeks for a good many years, and on my explaining this theory to him he readily agreed to some little experiments, and we found that by having him eat freely of meat for several days, and at the same time drink acid drinks, the urine became very acid and the uric acid in it diminished; then, upon giving him a large dose or two of bicarbonate of potash, he promptly got a headache, with increased excretion of uric acid, and this headache could again be promptly stopped by giving half dram doses of dilute nitrohydrochloric acid, showing very clearly that in the first place the acid was retained and then rapidly excreted under the potash, and again retained on giving the acid. A singular thing, too, is that an acid will not only prevent or cure a headache of this kind for a day or two, but for weeks. The most rational explanation of it is that the retained uric acid becomes converted into urea; and the fact that uric acid given by the mouth does not increase the amount in the urine might be regarded as evidence of uric acid being thus convertible. Indigestion and headaches are sometimes intimately related. Suppose, then, the uric acid present: it either directly irritates or by other means interferes with the circulation in the liver and spleen, in this way bringing about congestion of these organs and catarrh of the stomach, with indigestion, following this nausea and diminished appetite; then later on comes the fall in acidity with plus excretion of uric acid and headache. Closely related to headaches is that "tired feeling," a feeling of mental depression, coming on in the first warm days of Spring, when blood "purifiers" are so much in demand. Examine the urine of those patients and you find it loaded with uric acid, and this is what causes the depression. During the cold months of winter there is usually a large ingesta of meat and a very inactive condition of the skin; consequently the blood is liable to lessened alkalinity and consequent deposit of uric acid. In the first warm weather the skin becomes more active, there is a large loss of the acid portion of the blood from that channel and the blood becomes more alkaline, washing out from the liver and spleen the stored up uric acid.

As to gout, all are agreed that it is merely the result of uric acid driven into the joints.

Sir A. Garrod has pointed out that the car-

tilages and ligaments of joints are less alkaline than the blood and tissue fluids in general, so that if uric acid is retained in the spleen and liver because they are less alkaline than other organs and tissues, it may be retained in the fibrous tissues and cartilages of joints for a similar reason. Further, the joint structures are less vascular than the liver and spleen, and will be but slowly influenced by blood changes. The most common way in which uric acid comes to be driven out of the blood and deposited in the joints, is by a rise of acidity, but any drug which diminishes the solubility of uric acid, e. g. lead and iron, will act in the same way; so that gout is simply a retention of uric acid in a joint, and the cure of that attack is simply a washing out of the urid acid by salicylates, alkalies or colchicum, which latter Broadbent thinks acts as an alkali.

There are two classes of people who usually have gout; the rich, overfed and under exercised, and a certain class of men who work in the water about wharves and docks. This latter class illustrate the theory laid down very nicely. They are constantly drinking cheap beer, which is strongly acid, and their clothing, constantly wet, checks excretion of acid perspiration. Result—deposited uric acid.

Closely allied to gout is acute rheumatism. Flint, in his *Practice of Medicine*, says: "There is a growing belief that acute rheumatism belongs to the class of infectious diseases, and is caused by the presence of a specific micro-organism. The course of the symptoms of the disease can be better explained upon this supposition than upon any other which has been suggested." Gout is due to uric acid and is cured by sal. of soda, with an enormous excretion of uric acid. Rheumatism is cured by sal. of soda, also with an enormous excretion of uric acid. Besides salicylates the only drugs which have obtained any great repute in the treatment of acute rheumatism are the alkalies, and these again promote a free excretion of uric acid. Then again, exposure to cold and wet in a young person will produce acute rheumatism; in an older one gout. Meat, beer and wines are harmful in rheumatism, also in gout. Again, nature if left to herself, generally tries to right matters in any pathological condition. And in this particular case her first endeavors are to render the blood more alkaline and the excretion of uric acid greater by pouring out a strongly acid perspiration. In the face of this it is difficult to see why a microbe should be necessary to explain the symptoms of rheumatism and not of gout.

It is pretty generally conceded that migraine is due to a tetanus in the muscular walls of the vessels of the affected part of the head, and if this be so, and some cases of epilepsy are due to spasm in certain other neighboring regions, and if the spasm in the case of the headache is due to uric acid, it is but a small step to suppose that the epileptic spasm may be due to the same cause. Now, from experiments by different observers, we find, that before an attack of epilepsy the amount of uric acid is very much diminished, while during the attack it is secreted freely, showing that while it is stored up it causes no trouble, but when it begins to circulate freely we get the attack. I do not mean to say that all epileptic attacks are due to uric acid, but I think some are, or rather to its effects on the arterial tension and cerebral circulation, and I think also, where there is an organic cause, such as a thickened membrane or a depressed fragment of bone, which is constantly present, and the attacks occur only occasionally, that these attacks may be precipitated by the vascular changes brought about by the uric acid.

I shall not go into the action of uric acid in the causation of diabetes and Bright's disease, as I hope on a future occasion to have an opportunity of discussing these diseases in the other half of this paper; but we have all noticed that a large percentage of our public men in recent years have died of one or other of these diseases. These men, generally speaking, were high liverers, and we may presume did not take a great deal of physical exercise, and as a result had a good deal of uric acid in their blood. This had to be excreted and an irritation of the kidneys may have been set up by it, but this would not account for the presence of a foreign albumin in the blood, and Semmola, of Nápolis, is authority for the statement that such an albumin does exist in Bright's disease. He also states that an albuminuria may be produced among other things by deficient activity of the respiratory and metabolic functions of the skin, and uric acid, when it causes high tension, contraction of the peripheral arterioles and coldness of the skin and extremities, brings about just those conditions which will interfere with proper activity of skin function; it will thus produce albuminuria, and the albuminuria will eventually produce nephritis.

The relationship of glycosuria to gout has long been noticed, and it has long been observed that they alternate; when the gout is bad the sugar is absent, and when the attack of gout is passed the sugar returns.

Now, in speaking of gout, we arrived at the conclusion that during the attack the uric acid was in the joints. Consequently it was not in circulation, and therefore did not set up the irritation necessary to produce the glycosuria, and after the attack had passed or been treated for some time, it was in circulation and did cause glycosuria. Just once more: Dr. F. Staples a short while ago mentioned to me the fact that he had observed a close relationship between uric acid and asthma, and instanced some cases. I find a scant literature on that subject, but its well known action on the arterioles, either directly or indirectly, will undoubtedly cause asthma in a case thus predisposed.

It follows from what has been said that the best treatment of these diseases is to diminish the formation of uric acid, urea and acids, as far as is compatible with healthy function, and to use some means of diminishing acidity, so that nothing should interfere with the free excretion of all uric acid formed.

These indications are best fulfilled by reducing very greatly the animal food, eating largely of fruit and vegetables and avoiding beer and wine. Exercise, although it increases the amount of uric acid, does not raise acidity, and, indeed, may even lower it. So that it promotes rather than hinders the excretion of all uric acid formed. Drugs are useful at a crisis and to prevent the continuance of severe symptoms, but the only treatment that goes to the root of the matter is prevention by diet. Of the drugs that promote excretion salicylate of soda stands first. It combines with the uric acid and forms the highly soluble salicyluric acid. Next in order come the potash salts, but contrary to my early teaching I find that lithium is of no value whatever in these cases, but really does harm. No doubt the urate of lithium is very soluble, but lithium does not get a chance to combine with the uric acid to form urate of lithium. Given internally it forms a nearly insoluble triple phosphate with phosphate of soda or with the triple phosphates of ammonia and soda; it thus practically removes from the blood one of the well known solvents of uric acid which is generally present there.

A BILL to abolish the office of Coroner in New York State in accordance with the provisions of the new constitution, and the suggestions of the State Medical Society has been drawn and will soon be introduced in the Legislature. Its aim is to restore to the legal system of the State the judicial functions now exercised by the Coroner and to make the examiners purely medical officers. Coroner's juries will consequently be abolished.

THE SYMPTOMS AND DIAGNOSIS OF THE INDIGESTION OF STARCHY FOODS.¹

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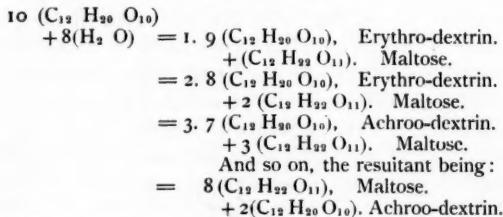
THERE are many reasons why the text-books are silent upon the subject of this paper. The ease with which the contents of the stomach can be examined, the accuracy with which the effect of pepsin can be estimated, the zeal and energy of the manufacturers of digestive ferments have placed our knowledge of gastric digestion in a very satisfactory condition. To one who will carefully study the accurate work of Hayem and Winter, and who will follow their teachings, the chemistry and physiology of the gastric fluids are well understood. Yet, after all, the gastric may be stated to be only the preliminary to duodenal digestion. And that gastric digestion is not even essential, is shown by observations of Czerny, who demonstrated that a dog could live for five months after his stomach had been removed.

The digestion of starches, it is well known, takes place in the mouth and in the intestine. The older physiologists were of the opinion that the digestion of starches came to an end in the stomach. Kellogg, however, has shown conclusively that starch digestion can go on, under certain conditions, in the stomach. One hundred and forty-nine cases in which starch digestion was especially studied, complete conversion was found in 2 per cent. The conditions under which this is brought about will be considered at a later period.

Starch digestion, according to Brown and Heron, may be represented as follows:

One molecule of gelatinous is converted into n molecules of soluble starch.

One molecule of soluble starch—



We will now consider this digestion as it takes place at the various portions in the alimentary canal.

The term buccal dyspepsia has been used for more than a score of years. It was supposed to

be characterized by insufficient nutrition, resulting in emaciation, abdominal distention, flatulence, and colicky pains, or abdominal distress, and was due to imperfect conversion of the starches in the mouth. Investigation subsequently showed that this imperfect conversion was but a part, and perhaps a minor part, of the causation, the more important being hasty mastication. The hasty mastication resulted in (1) imperfect breaking up of the starch grains, (2) deficient quantity of saliva, and (3) imperfect insalivation. Since the conversion of insoluble starch into soluble sugar depends upon not only a sufficient amount of saliva, but also upon trituration of the starch grains so that their capsules shall be thoroughly ruptured, and thorough mixture of the saliva with the starch, it can readily be seen how very important is complete mastication. With these three factors in full play, starch conversion is practically instantaneous. Naturally a considerable portion in this form of indigestion—so-called buccal dyspepsia—can be cured by eating more slowly, on the one hand, and by limitation of the starchy foods which are ingested, on the other. This cause of dyspepsia is far more frequent than it is popularly supposed to be, and the neglect to properly appreciate this etiological factor explains some of the failures in therapeutics of those who place great reliance upon the results of the examination of the stomach contents. The careless hurrying of the carbohydrates into the stomach without their being properly acted upon by the ptyalin of the secretions of the mouth is, as I have said before, a very important cause of dyspepsia. Lees has recently called attention to another prevalent error, which is frequently, I imagine, even encouraged by physicians. Too much amylaceous food is taken into the stomach soaked in tea, coffee, milk, beef tea, and other fluids. The result of this is that insalivation is not at all performed, and the ptyalin, quite likely deficient in amount from lack of mastication, is present in such small percentage that it is practically inoperative. The stomach is not expected to originate the digestion of starches; it may, and likely does, continue the process, when commenced in the mouth, for about half an hour. The natural inference from this is that fluids of any kind should not be used while masticating amylaceous food, and the patient should be restricted from the too free use of tea, soups with vegetables, puddings with milk or cream, or boiled farinaceous foods with the same. The results which are obtained in practice tend to show the correctness of the observation. When

¹Read before the Medical Society of the State of New York, at its ninetieth annual session, January 29, 1896.

we consider that, depending upon the dryness and hardness of the food, from one to three pints of saliva are secreted daily, and that the percentage of ptyalin present (in mixed saliva) is according to Frerichs, .0141, the action of the hydrolytic ferment is by no means insignificant. When, from the causes above mentioned, the amount of carbohydrate food daily ingested, which is necessary for an adult, varying, according to Parkes, from twelve ounces (at rest) to sixteen or eighteen ounces in laborious occupation (practically about two-thirds of the total food), is hurried into the stomach with but little conversion, the results to be expected in the intestines are not far to seek. What the effect of the presence of a large amount of unconverted starch in the stomach may be on gastric digestion, is not, so far as I know, determined, nor, indeed, is it within the scope of this present investigation to inquire.

In the stomach it is admitted that the action of the amylolytic ferment, ptyalin, may continue for about half an hour, its activity being finally checked by the fatty acids, or by the free hydrochloric acid, the latter even if in small quantity. On the other hand, it has been stated that when these acids are in organic combination they may favor starch conversion. Recognizing the amylolytic changes by means of the iodine-iodide test (Lugol's solution; starch, blue coloration; erythro-dextrin, red or purple; achroo-dextrin, brownish; the sugar, maltose or glucose, being detected by Fehling's solution) Kellogg found in the series of cases above mentioned that the purple color of erythro-dextrin was detected in 67.8 per cent., and the brown color of achroodextrin in 17.4 per cent. The conditions under which this unusual digestion takes place are pronounced hypopepsia, or to be more accurate, hypopepsia with hypo-acidity. In fact, the state of starch digestion may be a very good index of the degree of total acidity. When Lugol's solution gives a brown coloration or no reaction whatever, complete conversion of starch has taken place and the presence of sugar can be confirmed by the strong reaction given by Fehling's solution. A suggestion may be entertained that the prompt conversion of the starch into sugar which takes place under these conditions may result in the rapid absorption of the digested starch so that the conditions are less favorable for the development of acid fermentation than in the presence of a large quantity of unconverted starch. With this observation by Kellogg, I leave the subject of starch conversion in the stomach.

The digestion of starches is resumed in the small intestine. Owing to the inherent difficulties of the subject the various processes have not been so thoroughly worked out. As a matter of fact, buccal and gastric digestion are merely preparatory to the intestinal. In addition, here, proteids and fats as well as starches are digested, and failure in one direction must necessarily result in abnormalities in the other. In 1890 Boas attempted to study experimentally intestinal digestion in man. For this purpose he made use of vomited matter obtained by a reflux of the intestinal fluids into the stomach. He also made use of the stomach tube and of aspiration. Naturally the irritation of the stomach tube, even if the stomach had been previously irrigated, would result in some gastric fluid, so that unmixed intestinal fluid cannot be obtained. The subject was experimented with while fasting, and the reflux from the intestines was favored by his decubitus and by massage of the epigastric region. Although this method is not applicable to the study of intestinal dyspepsia in our patients, yet the observations of Boas had a certain practical value in that they demonstrated the influence of bad gastric upon the intestinal digestion. Perhaps the sole result of these experiments, so far as concerns starch digestion, is the statement that patients suffering from *hypochlorhydrie* do not suffer from intestinal troubles; in other words this is confirmatory of Kellogg's work, which shows that under these conditions starch is digested in the stomach, and the opportunity for intestinal disturbance from undigested starch is not presented. Another factor of importance in intestinal digestion is the presence of micro-organisms, whereas normal gastric digestion is probably free from them. The conditions favorable to the action of amylopsin are similar to those favorable to the action of ptyalin; namely, moderate heat, a slightly alkaline medium and removal of the changed material from time to time. The ferment in the pancreatic juice, distinctly amylolytic (amylopsin), cannot be distinguished from ptyalin. The digestion of starches results in maltose or glucose, the latter being always the final result. Obviously here we must consider that the effect of the pancreatic fluid on starch may be practically inhibited by the discharge of a large amount of acid fluid through a patulous pyloric orifice in cases of marked gastric acidity —another point at which gastric and intestinal indigestion approach. The *succus entericus* from Lieberkühn's glands is believed to convert starch into sugar, but under what conditions and to what

extent physiological literature is generally silent.

So far as the difference in the digestion of starches at the various points is concerned we may follow Kirke in stating that while the pancreatic and intestinal juices are able to turn the achoroodextrin which remains into maltose, and maltose into glucose (dextrose) it is doubtful whether saliva possesses the same power.

The difficulty of reaching the diagnosis of the indigestion of starches in the intestine is already apparent, yet we believe that in a given number of instances it can be arrived at with reasonable certainty. The importance of making this investigation is great when we consider that to the assimilation of changed starch we owe much. On the other hand we have proof—if proof were lacking—that the indigestion of starches is a frequent condition—not so frequent, however, as Coutaret in 1870 would have us believe, 60 per cent. of dyspeptics—by the prevalence and somewhat good repute of dyspepsia-cures based on raw beef and hot water. And when we consider that in France bread has a prominent post on the dietary and in other European countries starchy foods are even more largely employed, the importance of the subject is apparent. In this country, not only does hasty eating, but bad cooking, and the imperfectly raised biscuit and cakes, and other pastry are often saturated with greasy substances, and give us reason to believe that starchy dyspepsia is even more frequent.

Taking up the symptoms of intestinal indigestion as referable to the failure of starch conversion I would place first and foremost constipation, of which the cause is quite likely that the colloid-like unconverted starch does not so readily permit of watery osmosis into the intestine as does the sugar into which it is converted, which acts as a crystalloid. The accumulation of undigested and unabsorbed material may even be considerable and give rise to marked enteroptosis (Glenard). On the other hand diarrhea is comparatively infrequent; however, fermentation may go on briskly so that a large amount of irritating material may be formed and its expulsion take place. Should diarrhea exist it is likely to be diarrhea alternating with constipation and not the persistent one which may characterize other intestinal conditions.

The symptom next in importance is undoubtedly flatulence, especially that which occurs two or three hours after meals. The question here arises as to how much of this may be due to gases from the imperfect digestion of proteids in the alimentary canal. To clear up the question we

must refer to the work which has been done upon various sulphur compounds. Baumann in 1880 propounded the theory that the combined or ethereal sulphates found in the urine were an index of the amount of putrefactive products absorbed from the intestine; these are chiefly indol, phenol and skatol; the latter is practically of no importance in this study since it is found almost exclusively in the large intestines (Filati). Indol by oxidation become potassium indoxyl-sulphate, long known as indican. Looking upon indol as the product of bacteria upon the proteids as Kuhne and Nencki would have us believe, and considering with this the view of Pisenti that the amount of indican depends largely upon the activity of the pancreatic fluid we come close to the clinical fact that clay-colored stools, excessive preformed sulphates, and abundant indican in the urine are associated with defective secretion of pancreatic fluid. To Herter and Smith all who study this subject must acknowledge their indebtedness for their exhaustive work upon the preformed sulphates and indican and their relations with intestinal indigestion. Since then we have the proteids as the source of sulphur compounds, the causation of flatulence can be determined by the increased ratio of preformed to inorganic sulphates and by the excess of indican in the urine. Therefore, flatulence as a symptom, when the chemical evidence of proteid indigestion is absent, can with reasonable certainty be referred to amylaceous dyspepsia, with greater reason, indeed, than appears above, because the gastric hydrochloric acid retards bacterial activity, and an excess poured into the intestine markedly interferes with the digestion of starches. Confirmatory of this view is the observation of Kast, that neutralization of the gastric juice with sodium carbonate was followed by an increase of ethereal sulphates. Biernacki practically reaches the same conclusion, when he says that the excretion of putrefactive products is large, with great decrease of hydrochloric acid secreted. The further suggestion can be made that the gases due to proteid indigestion are sulphur-containing and consequently more obnoxious than those of the marsh-gas series of carbo-hydrate origin. Yet it must be borne in mind that gluten associated with the carbo-hydrates is a sulphur-containing body, so that this distinction is not so important as it would at first appear. Coincident with flatulence are the painful phenomena from heaviness, tenderness, and abdominal discomfort to colicky pains. Since flatulence is more marked with starchy than with proteid indigestion, these symptoms are more

prominent. Further, because constipation is an important factor; abdominal heaviness in addition to acute pain is frequently found. Not only are local physical signs, as fullness, tenderness and changes in percussion note more marked than in protein indigestion, but the general symptoms are more numerous and persistent. The opportunity for absorption of peccant material—to use an old term—is favored by the constipation, but as has been stated, the ptomaines of decomposed starch (amulon-ptomaine) are almost as injurious to the human body as the ptomaines of nitrogenous foods. Therefore we note the lassitude, habitual malaise, general debility (partly from insufficient nutrition), the insomnia, the various sensory symptoms, headaches, vertical, frontal, or occipital, and vertigo. The heart symptoms are prominent, due in part to gaseous distention, and vary in importance from palpitation, cardiac distress, cardiac pain, and tachycardia to syncope. We have also the urticarias, the muddy complexions, cold hands and feet, referable to this cause. We may even observe marked mental changes as hypochondriasis, intellectual apathy and morbid somnolence.

The picture is a familiar one, but we all have doubtless failed many times in not differentiating this particular form of indigestion, and in attributing too much importance to the gastric, to the neglect of the intestinal digestion. After all, the diagnosis by exclusion, for such must be the method employed, and its accuracy can be readily put to the touchstone of clinical experience. Those, in whose persons starch is imperfectly digested, tolerate badly the starchy foods. The causes of the indigestion of starches are: (1) excessive ingestion of carbo-hydrates, (2) imperfect insalivation, (3) hasty mastication, (4) too diluted starch foods, (5) too great gastric acidity, (6) insufficient or perverted secretion of pancreatic fluid, (7) excess or abnormal activity of micro-organisms, (8) intestinal torpor or exaggerated peristalsis, and (9) imperfect absorption of already digested foods.

The diagnosis rests upon the positive evidence of constipation, flatulence, the sensory phenomena, the general systemic disturbances and remote painful symptoms existing in a marked degree, and upon the negative evidence as found in the ethereal sulphate-ratio and the amount of urinary indican. The picture seems clearly outlined, and at the close of our study we may say that the diagnosis of the indigestion of starchy food should be reached with reasonable certainty.

749 MADISON AVE.

CLINICAL MEMORANDUM.

ATAxic SPEECH FOLLOWING THE USE OF TRIONAL.

By J. C. WELCH, M.D.,
OF BELLEVUE, PENNA.

THE patient, aged 48 years, was a physician of good mental qualities, and of fine physique, who gave a history of having been addicted to the use of morphia for fourteen years. He administered it by mouth and hypodermically, ordinarily taking two grains hypodermically in the form of Magendie's solution. For a week previous to coming under the observation of the writer, he had been consuming a large quantity of whiskey. During this debauch he lost his hypodermic syringe, so that he was suffering from the absence of morphia, as well as from excess of liquor. He was restless and irritable, had insomnia and slight delirium; also had anorexia and diarrhea.

The patient was put to bed and ordered Trional, gr. xxx., every three hours, Tr. nux vomica, $\frac{1}{4}$ oz., three times a day. Beef tea, milk, and light diet was administered at frequent intervals. The diarrhea was treated with bismuth and salol. During the following four days the patient slept $2\frac{1}{2}$, $7\frac{1}{2}$, 17, and 18 hours respectively. The trional was reduced to gr. xxx. morning and evening. During the next 24 hours he slept 7 hours, and during the next day, 14 hours. He was now noticed to be dull and bewildered, and complained of heaviness and numbness of the limbs, and of great mental depression. His speech was very ataxic; the difficulty of speech was apparently of central origin, and at first a beginning cerebral hemorrhage was feared. In the preceding six days, from two to two and one-half ounces trional had been taken. The administration of this drug was then entirely suspended, and caffeine and digitalis substituted. There was a gradual disappearance of all the unfavorable symptoms, the insomnia not returning. The patient remained in bed twelve days, in his room a week longer, and then went on a sea voyage under the care of a companion, and thus disappeared from further observation.

A MISTAKEN DIAGNOSIS OF HYSTERICAL AMBLYOPIA.

By DR. HARRY FRIEDENWALD,
OF BALTIMORE, MD.

THE separation of cases of organic from those of functional disease of the nervous system is usually not difficult, especially when the patients can be kept under observation for some time. In some cases of organic nervous disease, however, the proper signs may be entirely wanting for diagnosis; they may be replaced by those that are more or less characteristic of hysterical affections. In other cases, again, the signs of true organic disease and those of functional disorders are so mingled that the diagnosis becomes a matter of the greatest doubt. Thus Dr. Buzzard (Brain, 1890) described a number of cases in which the diagnosis of hysteria had been made, and in time the true nature of the disease was shown to be disseminated sclerosis.

It is useful to call attention to these cases, for they

teach one to be very careful in diagnosis, and especially to go slowly before designating a case as "hysterical." The most careful examination will sometimes not save us from error. In the case which will be reported below, this error was of the most serious nature.

Before describing the case, it may not be out of place to mention that hysterical affections are sometimes met with in ophthalmic practice. The most common are functional disturbances of vision, without any ophthalmoscopic alterations. Central or peripheral vision may be affected. The fields of vision for the several colors and for white are usually altered. The case which is to be presented in this paper is one in which the diagnosis of "hysterical amblyopia" was made.

Mrs. A., aged 40, consulted me May 23, 1892, complaining that her vision had been dimmed for the past three months. The dimness was most noticeable during the day, and varied greatly. She had also had severe headaches. Her menopause had suddenly come on almost one year previously. Her family history was good. No ophthalmoscopic changes could be discovered. The papillæ were normal, excepting, perhaps, a slight pallor of the macular halves. V. R. E. 8/24; V. L. E. 4/60. The field of vision of the right eye was somewhat restricted in its outer and lower portions, but this was rather indefinite; there appeared to be indefinite central scotomata in both fields. A thorough physical examination did not reveal any symptoms of organic disease, the only exception being a very low specific gravity of the urine (varying between 1010 and 1003). The patient's general appearance and manners strongly suggested a hysterical condition.

The diagnosis of *retro-bulbar optic neuritis* was made. It was believed to have some connection with her menopause. She was treated with the red iodide of mercury, then with jaborandi, and later with mercurial inunctions and iodide of potassium. But her condition did not improve; for some time the vision of the right eye remained the same, while that of the left eye gradually diminished. August 21st, V. R. E. 8/24; V. L. E. could not count fingers, unless very close, and then with greatest difficulty. At this time there was a large defect in the outer lower portion of the left field of vision.

At this time a consultation was held with Dr. X., a well-known specialist in diseases of the nervous system. He was unable to find any signs of organic nervous disease.

The patient was then sent to Dr. Y., an eminent oculist of New York, for it was evident that the diagnosis of retro-bulbar neuritis was at least very doubtful. In that case we should have found definite ophthalmoscopic changes after such a length of time, and yet there were none. The diagnosis had, therefore, been changed to *hysterical amblyopia*.

Prof. Y.'s answer stated that he considered the affection "purely nervous." "There is an indication of sector-like temporal pallor, as in central scotoma." But he could find "no central scotoma, not even for colors. Her field is irregular; in the right, the outer lower quadrant is absent; in the left, the lower half; then again,

she saw the hand in the lower half. V. R. E. at first 20/50, then with weakest glasses 20/30. Reads No. 2 Jaeger and should read No. 1, commensurate with V, for distance. The whole disease is a form of neurasthenia, and I am sure she will recover."

The great variations which had previously been noted by me, both in the fields of vision and in central vision, as well as those mentioned by Dr. Y., strengthened me in the belief that the diagnosis, concerning which we were all of one opinion, was correct. But treatment with this view, especially suggestive treatment, was without the slightest effect. Early in October, therefore, it was deemed wise to again have her undergo a thorough examination of her nervous system, and Dr. Z., a distinguished professor of Psychiatry was called upon. He likewise saw the patient a number of times, and concluded that the affection was of a purely functional character. Treatment with ergot, and later with tonics, did not improve her condition. She became somewhat dull, her memory began to fail, and the vision of both eyes gradually diminished. November 20, V. R. E. 8/60, V. L. E. could not count fingers. Still there was no ophthalmoscopic change.

During the latter part of December, as I was afterward informed, her gait became reeling, her limbs became weak, and her mental condition became much worse; she slept a great deal, her memory was very poor, and she spoke very little. At the same time her headaches had ceased. January 1, 1893, she lost control of the bladder, and became too weak to remain out of bed. Her condition gradually became worse, and on January 13 she died with symptoms of cerebral edema.

In the absence of a post-mortem examination, it is impossible to decide as to the cause of her complaints and of her death. But it was evident that the diagnosis of hysterical affection which was made by me, and with which several eminent physicians agreed, was a mistaken one.

There was certainly some organic cerebral affection which ran its course without involving any peripheral sensory or motor nerve, excepting the optic nerves, and produced no symptoms but diabetes insipidus, and toward the end, loss of mental power.

THERAPEUTIC NOTE.

Poisoning with Creosote.—At a recent meeting of the Société Médicale des Hôpitaux FAISANS (*Presse Médicale*, 1896, No 6) reported a case of chronic pulmonary tuberculosis that was being treated with injections of creosoted oil, 1.15—4 $\frac{1}{2}$ ounces, representing more than two drams of creosote, being injected daily. The most conspicuous symptoms of the resulting intoxication were nervous in character and included especially delirium and dilatation of the pupils. The renal secretion was diminished and the urine was deeply colored, almost black. The prominence of the nervous phenomena raised a suspicion of tuberculous meningitis, but careful investigation disclosed the condition of toxic pseudomeningitis.

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SATURDAY, FEBRUARY 15, 1896.

PRESIDENT PARK'S ADDRESS BEFORE THE NEW YORK STATE MEDICAL SOCIETY.

THOSE who attended the meeting in the Senate Chamber at Albany, Wednesday evening, January 29, 1896, were given an intellectual treat unusual in quality.

To a professional man who has made a well-deserved reputation in medicine or in surgery, there is no such thing as leisure. His days and his nights are consumed in the routine of his work, in doing what must be done, and in preparing for what is before him. If he be a teacher in medicine, the demands upon the hours he steals from the night and from his own repose are still greater. He cannot block out his time deliberately, as does the scholar or the literary man. If he gains an insight into the realms of science, or surveys fields of literature not in direct touch with the immediate work in hand, he must do so by systematic use of the momentary intervals that may occur between important engagements.

That by such a method it is ordinarily possible

to gain a mastery of such a wide and intricate subject as Comparative Pathology, few of those favored ones who devote their entire time to investigation and thought would allow. But that such has been accomplished by the recent President of the New York State Medical Society, every one who heard him must admit.

There are no words but those of praise, not only for the selection of the subject which, of itself, was an inspiration to those possessed of the scholarly instinct and the spirit of investigation, but also for the masterly manner in which he surveyed the broad field of Comparative Pathology, as well as the familiarity with all forms of life that was displayed in his rapid review of the abnormalities presented by plants and animals. Throughout it all was noticeable a comprehension of the principles of evolutionary science that is rarely observed.

There were two propositions in President Park's address worthy of comment:

The first was, that it would be well if a society were organized for the study of Comparative Pathology, with a membership that would include all workers in each special department in which the abnormalities of every living thing are matters of observation and research. To the common fund of information each member would contribute, from the narrow field in which he worked exhaustively, his richest results and his most mature judgment; so that each, by comparing results attained in other analogous fields, and by determining points of similarity and of divergence, would broaden his own mental horizon and get a comprehensive insight into the general principles of pathological processes in all nature, impossible of attainment by any single worker in one department of life. That such an ideal is a credit to its originator, goes without saying.

The second proposition was, that, under the editorship of some man learned in all departments of nature—say Bland Sutton, for whom the President showed deserved respect—the accumulated observations of all investigators into nature's abnormal workings should be brought together in one work of several volumes; that these should be thoughtfully epitomized for the use of students, and that this condensed volume should be made

a text-book, the study of which should occupy some portion of the last two or three years in all our medical colleges.

The gathering together of the material for such a work is becoming yearly more easy of accomplishment, and that such a "system" will eventually be published seems more and more probable. But the study of pathology must be preceded by a thorough mastery of anatomy, both macroscopic and microscopic, of physiology, including physiological chemistry, and of embryology. Under prevailing conditions of admission to medical colleges, in order that Comparative Pathology may be taught at all, there must first be established competent courses in comparative anatomy and physiology. It is a question if, in a four years' course, there would be any time for the thorough mastery of comparative anatomy and physiology preparatory to the study of Comparative Pathology. The demands of every department in a medical curriculum are constantly increasing. There is now very great difficulty in giving students a fair comprehension of the essential facts which he must master in order to satisfy his college and the State before he can obtain his degree and his license to practice medicine.

If we could relegate to the preparatory course the subjects of botany, chemistry, physics, including electricity and refraction, morphology and histology, then perhaps it would be possible to introduce successfully in all our schools comparative methods in the teaching of anatomy, physiology, and pathology. For the great majority of colleges, however, such a day is far distant, and distant the more since the recent action of the State Society, sanctioning an amendment to the law permitting a student to enter a medical college conditioned on "one or more subjects" at present required by the State before he can receive a "medical student's certificate" which he is now compelled to earn before he can matriculate in any medical college in the State.

In the present state of medical education, he who would gain a competent knowledge of Comparative Pathology must imitate our President and abstract the time necessary for it from the hours of his own rest and recreation, or seek special schools.

THE ANTIVIVISECTION BILL IN CONGRESS.

In another column we print a detailed account, by our special correspondent, of the hearing before the District Commissioners on Senate bill 1552, to which we invite the careful consideration of the medical and scientific professions. The bill is printed in full, together with a list of the Senate and House Committees through whose hands this bill will pass, before it reaches the floor for general consideration. These details are given with a purpose. First of all, the medical men of the country should know the exact contents of the bill, and the edition printed by Congress is so limited that it is impossible for our Washington confrères to obtain a sufficient number of copies for distribution. In the next place, it is important for the medical profession to know exactly who the Senators and Congressmen are to whom this bill has been referred for careful consideration. These senators and congressmen should be informed by the medical and scientific men of their respective States of the absolute absurdity of this bill and of its injustice to science, and we urge that members of the profession in the States from which these Senators and Representatives come, take immediate action, and bring the proper information to the attention of each and every member of the two committees.

The suggestion made by our special correspondent that this movement in Washington may be the beginning of a national movement is worthy of attention. The bill, though primarily intended for the District of Columbia, is not one of merely local interest, and if not killed in committee will give the antivivisectors in various parts of the country an unduly exaggerated idea of the justice(!) of their movement. This *local* bill is one of *national* interest to the medical profession. If it is reported to the Senate and the House we may expect to see similar and even more radical bills presented to many of the State legislatures within a short time. Let us all unite, therefore, in making a national fight at Washington, and in giving this bill such a severe and total defeat that it will never again be allowed to see daylight.

We desire to call particular attention to several points in the bill. First of all, the bill is misnamed. The title should read: "A bill for the

prevention of advance in medical science in the District of Columbia, and for the prevention of the application of discoveries already made." This exactly expresses the result the bill would attain if allowed to become a law. The question naturally arises whether the bill could be amended so as to suit all parties. To this we reply in the most emphatic language, No! The bill is too radically wrong to permit of satisfactory amendment.

The very *general* character of the bill should attract attention: "That hereafter no persons shall perform on *any living animal* *any experiment* calculated to give pain to such animal, except subject to the restrictions hereinafter prescribed." *Any living animal!* That statement is sweeping; and our friends who proposed the bill could not have realized all it implies.

Section 2 deserves especially close attention, for it absolutely prohibits all experimentation in bacteriology; it practically compels the use of ether or chloroform in every hypodermic given to animals, and in the preparation of vaccine; by the provisions of this section experiments to test dogs for hydrophobia are also excluded.

But of all the faulty provisions, section 6 is the extreme *par excellence*. The Commissioners of the District are to appoint an agent of the Humane Society to inspect the laboratories; "special inspectors—who may be willing to act as such inspectors gratuitously," are also provided for. It is but natural that the most hysterical fanatics will make application for such appointment, and we would thus see the surgeon-generals of the Army, Navy and Marine Hospital Service, as well as the chief of the Bureau of Animal Industry made subject to supervision by a local society composed of persons who are absolutely ignorant of the conditions governing the experiments upon which they would report.

Section 5, providing for reports of experiments to be made to the Commissioners, is equally harmful, and would lead to premature publication through the daily newspapers of half-finished results.

The press reports of the hearing before the Commissioners show that the vivisectionists condemned brutality as well as did the antivivisectionists, and all thinking men will agree with them

in this. It has not yet been shown, however, that such brutality exists in this country, as the antivivisectionists would have us believe.

Washington is the best place in the country to fight this question out to the finish, for this bill, and *any similar bill* would seriously handicap the workings of the four sanitary departments of the national government, *i.e.*, the Marine Hospital Service, the Bureau of Animal Industry, and the medical services of the Army and Navy, and any legislation which affects their work, more especially the work of the Bureau of Animal Industry, will also affect the State Boards of Health throughout the country; for at the present moment the bureau is furnishing tuberculin and mallein to many of these boards. The present bill would result in stopping this supply of material now used in many States. The attention of the State Boards is called to this point, and we urge them to immediately enter urgent protests against any legislation of this or of similar character.

Washington is perhaps the centre of animal experimentation in this country at the present moment, and we can rely upon our scientists there to oppose this measure to the full extent of their influence, but as we would all be affected more or less directly by national legislation, it behoves the medical profession and the scientific world generally to move in this matter with promptness.

The legal question of making governmental departments subject to revision and inspection by the District Commissioners, or by volunteer inspectors of a local society of laity, is a point for careful consideration.

GENITO-URINARY AND VENEREAL DISEASES AND SYPHILIOLOGY.

A CRITICAL RÉSUMÉ OF RECENT ADVANCE: LINEAR ELECTROLYSIS IN STRICTURE OF THE URETHRA.

AMERICAN surgeons many years ago reached the conclusion that electrolysis for the treatment of stricture of the urethra when metallic, olivary tips seated at the end of the flexible bougie were employed, was not curative, and that it might produce a still greater stenosis of the canal. If the electrolytic action, or, we may say, affinity, could be brought to bear on the stricture tissue, and if we could then produce its absorption, the

method of treatment would certainly be an ideal one. Unfortunately this result could not be produced, for when the current was sufficiently strong, the electro-chemical action was expended upon the mucous membrane, the disintegration or destruction of which would occur before the fibroid stenosis could be acted upon. It is thus rendered plain why the treatment was a failure, and its use very often a danger, since by it the mucous membrane, so essential to the formation of a restored urethra, was destroyed, and a ragged, cicatricial canal was left, which promptly became more stenosed than it was before the operation. This having been our experience, and such being our conclusions, it can be readily understood that several genito-urinary surgeons of this city were both skeptical, and even impatient, when a new method of treatment of urethral stricture by electrolysis was brought to their notice by its inventor, Dr. Fort, the professor of anatomy of the Faculty of Medicine of Paris. In a recent essay ("Electrolyser for the Surgical Treatment of Stricture," *New York Medical Journal*, November 16, 1895, and *Traitemenit des Rétrécissements par l'Électrolyse Linéaire*, Paris, 1894), Dr. Fort describes his instrument, the *technique* of the operation, its immediate symptoms, and its remote results. The author of this review placed at Dr. Fort's disposal fifteen hospital cases of stricture, and has carefully studied the operative methods and the condition of the patients after operation. The electrolyser resembles in a general way Maisonneuve's urethrotome when the filiform guide has been attached and the knife has been pushed down the grooved staff. It really consists of two nearly equal parts, the distal one being the filiform guide and the proximal one being a fine, soft bougie (calibre about 6 or 8 French scale), through the whole length of which there is a thin, metallic wire. This wire, just before the junction of the proximal with the flexible distal portion, is bent so as to form an obtuse conical projection, which resembles the blade of Maisonneuve's instrument. This platinum blade, therefore, is the active agent in the operation. The filiform guide is passed down the urethra until the electrolytic blade (as we may call it) rests on the face of the stricture. The instrument is then connected with the negative

pole of a continuous current battery and the positive pole, which is flat and of the size of one's palm, is placed near the penis, either on a thigh or on the lower part of the abdomen. The current is then turned on. This should be, in general, of a strength of ten milliamperes, as shown by an attached galvanometer. During the operation, the electrolytic blade remains cool, and is gently pushed downward by the surgeon, and in many cases traverses the strictured tissue in less than a minute; but in very firm, dense, and quite long strictures, two or three minutes may elapse before the operation is complete. In cases in which there are several strictures seated at a distance from each other, more time is consumed. Haste, however, is not at all essential in these cases; indeed, it seems to the writer that a more lasting effect is produced if the blade is allowed to traverse the tissues very slowly. In this way, in all probability, a more potential action is produced. In the judgment of the writer, better results will follow in very dense and extensive strictures if the action of the current is prolonged. In all cases, copious irrigations with mild antiseptic solutions should be used, both before and after the operation. In this connection, it may be remarked that before operation Dr. Fort threw into the bladder, in most cases using considerable force, several, even many ounces of an antiseptic solution, without any untoward result. He did the same after the operation, seeming to care nothing about the force which he exercised upon the compressor urethrae muscle. On the withdrawal of the blade, the evidence of the electrolytic action is seen in the little mass of disintegrated, perhaps slightly effervescent, tissue which comes away with it. In general, it may be stated that the operation is nearly painless; some patients make an outcry from fear, while others complain of a slight stabbing sensation. There may be no hemorrhage at all, or the flow of blood may be slight; it never is sufficient to cause any uneasiness. With our precise antiseptic methods, Maisonneuve's operation may now be done in most cases without fear of sepsis, and, as a rule, little or no fever is present. It is remarkable to observe how free patients operated upon by Fort's method are from febrile movement or any troublesome symptom. The writer was struck by the

calm confidence of the Paris professor in not sending patients operated upon to bed; indeed, in some cases, he allowed them to go out of the hospital, enjoining them to return for subsequent irrigation and dilatation. This course seemed startling to cautious surgeons who, in the past, even when using intelligent antisepsis, were always a little anxious for a patient after a Maisonneuve's operation; still, in more than a dozen cases, the writer has seen no untoward result.

Another point which is to be commended is developed in the after-treatment of strictures thus operated upon by Dr. Fort. He contents himself in these cases with the passage of olivary bougies of a maximum calibre of 24 French scale. In this conservative course he has the warm endorsement of the writer, for it is his firm conviction that if the lumen of a man's urethra, after an operation for organic stricture, can be maintained at a calibre of 24 French scale, that man is a lucky individual, and will be in far better condition (and certainly will not be in jeopardy) than if he were persistently treated with much larger sounds. Judicious treatment of strictured urethrae after operations is just as important as the cutting operation itself. From a study of the fifteen cases already mentioned, the writer is led to think that Dr. Fort's method is applicable to annular and bridle strictures in which the stricture tissue is not exceedingly dense or too exuberant. It is not a treatment, as a rule, by which a route can be tunneled through long, very dense, and copious inodular urethral stenoses. Thus, in the case of a man having a well-defined, not very long or thick stricture, at four inches down the canal, this contraction readily yielded to the electrolyser, while a large, dense, inodular stricture mass at the bulbo-membranous junction was wholly unaffected, and only traversed by Maisonneuve's guide and knife. Again, in another case, there was a stenosis of the urethra beginning just behind the glans and extending into the subpubic course, and having a length of four inches and a calibre of 8 French scale, the electrolyser could make no headway whatever. In this case, gradual dilatation is producing good results. The writer feels confident that many cases of firm stricture in the bulbous urethra may be traversed by Fort's instrument,

whereas most New York surgeons would have in the past subjected them to external urethrotomy. The electrolyser may lessen the number of cases of external urethrotomy, but it will not render the operation obsolete. The electrolyser is useful, in that it decomposes a segment of the stenosed urethral canal, and then by destruction of tissue, gives more relief than the thin incision of Maisonneuve's blade, and it does this with precision and almost without hemorrhage. Added to this, there need be no septic complications. Of the ultimate outcome of the operation, the writer cannot speak with authority, but it is fair to assume that if gradual dilatation is regularly, carefully, and persistently followed for a long period, the man may be wholly free from all distressing or dangerous symptoms, and he may void his urine with complacency and comfort.

ROBERT W. TAYLOR, M.D.

ECHOES AND NEWS.

RECENT telegraphic advices from Santiago de Cuba state that hemorrhagic smallpox is now raging among the soldiers stationed there.

A COMMUNICATION from Denver, Col., February 6, 1896, states that it is currently reported that Schlatter, the alleged new Messiah, has perished in a storm in New Mexico.

AN appeal has been made to the general public for subscriptions which will enable the admirers of the late Prof. T. H. Huxley to erect his statue beside those of Darwin and Owen in the Natural History Museum, South Kensington, England. It is gratifying to notice that this very proper tribute of respect to the great English scientist is meeting with substantial encouragement.

DR. H. ERNEST GOODMAN of Philadelphia died suddenly last week. Dr. Goodman was a prominent physician and connected with the Medico-Chirurgical College and Hospital of that city.

THE first meeting of the Utah State Medical Society has given evidence of the good quality of the members of the profession in this the latest member of the sisterhood of States. It was declared the sense of the society "that every member of it interest himself personally in securing the election of men for the next Legislature who favor the maintenance of a high standard of medical excellence in the State of Utah".

IN his race for United States Senatorship Dr. Hunter, of Kentucky, displays the true professional tenacity embodied in the homely phrase, "While there is life there is hope."

DR A. B. HIRSH has been elected president of the Medico-Legal Society of Philadelphia.

DR. UNNA again offers a prize for original work. The subject for 1896 is: "The Behavior of the Epithelial Fibrils During the development of Soft Nævi and Alveolar Carcinoma." The amount offered is 900 marks. For further particulars, the reader is referred to L. Voss, 34 Hohe Bleichen, Hamburg.

"PUBLIC HEALTH" is the name of a new quarterly journal of sanitation to be published at Philadelphia by Dr. W. B. Atkinson as the organ of the associated health authorities of Pennsylvania, the State Board of Health and the State Quarantine Board.

AT the International Congress of Obstetricians and Gynecologists to be held at Geneva, Switzerland, in September of this year, one of the questions for discussion will be the "Relative Frequency and most Common Forms of Contracted Pelvis in Different Countries, Groups of Countries and Regions." To Dr. Wm. T. Lusk of New York city, is assigned the duty of collecting information from the United States. He has issued blank forms for reports which can be had on application by any one having observations and statistics to offer.

IT is rumored that a new monthly journal to be known as the *Medical Council*, will shortly appear in Philadelphia. Its pages are to be especially devoted to obstetrics, diseases of women and children, including racial improvement.

THE Jefferson Medical College of Philadelphia has shown great enterprise in securing Prof. Turck, of Chicago, who began, February 3d, a course of ten lectures, under the auspices of that institution, upon the laboratory investigation of bacteriology, pathology, and upon general scientific research, with especial reference to diseases of the alimentary tract. One of the most gratifying results of these lectures is the stimulus that has been given to individual desire for original investigation, and a general awakening to the importance of well equipped laboratories for such work.

THE number of students attending the medical department of some of the German universities for the Winter, semester of 1895-1896, is as follows:

	Natives.	Foreigners.	Total.
Berlin . . .	883	375	1258
Munich . . .	516	677	1193
Würzburg . . .	182	532	714
Leipsic . . .	347	320	667
Erlangen . . .	187	187	374
Greifswald . . .	316	35	351
Freiburg . . .	85	240	325
Breslau . . .	310	6	316
Strassburg . . .	160	152	312

IT is stated that on the 10th inst., at the experimental laboratory of the Central Röntgen Association in Berlin, there was presented for examination, a young seamstress who had swallowed a needle the week previous. She had constant hematemesis and other symptoms of ulceration. The X-ray revealed the needle lying point downward in the right lower part of the stomach. Considerable ulcer-

tion being present, it was resolved to operate at once. The patient was placed under chloroform and the needle found as indicated and removed. The patient is progressing favorably.

IT is reported by cable from Berlin that Professor Brieger has finally succeeded in freeing the diphtheria toxin from all albuminous compounds. In an article in the July number of the *Zeit. f. Hygie. Infect.*, Professor Brieger stated that as he obtained the toxin more and more nearly in a pure state, the chemical reactions became less and less, and he there stated that he believed these reactions were due to the albuminous compounds thrown down with the toxin and not to the toxin itself. If he has actually obtained toxin in a pure state, he has accomplished an important advance, which may lead to the discovery of methods of separating the toxin, and possibly to manufacture it chemically.

AT the annual meeting of the Kings County Medical Association, the following officers were elected: President, J. C. Burwirth; vice-president, L. A. W. Alleman; recording secretary, F. C. Raynor; corresponding secretary, J. Scott Wood; treasurer, E. H. Squibb; member executive committee, Jonathan Wright.

DR. GEO. M. GOULD, 925 Walnut street, Philadelphia, requests librarians of medical societies, colleges, and associations to send him lists (with precise dates, etc.) of such periodicals as they need to complete their files.

He also begs physicians (or legatees) to send him accurate lists of such periodicals (or books) as they are willing to donate to libraries. Lists only are desired, not the periodicals themselves, until, after correspondence, it shall have been determined: 1. Where they are needed; 2. Where they will be properly cared for; 3. Where they will do the most good to medicine.

It is Dr. Gould's intention to aid established libraries in completing their files by thus forming a kind of (gratis) Exchange, and to encourage the formation of new public medical libraries by utilizing some of the vast number of valuable medical publications at present going to waste or destruction.

NEW INVENTION.

A CONVENIENT INSTRUMENT FOR VISUAL USE IN DIAGNOSIS WITH THE ROENTGEN RAYS.

BY W. F. MAGIE PH.D.,
PROFESSOR OF PHYSICS IN PRINCETON COLLEGE,
PRINCETON, N. J.

THE instrument here proposed for examination with the Röntgen rays I have not seen described elsewhere, and therefore present a brief account of it in the hope that it will be of use to investigators in this interesting subject.

A sheet of black paper, coated on one face with platinum-bari cyanide, is placed with the coated side inward across the end of a tube or box, into which the observer looks, and which is so fitted to the face or shielded by cloths that

the phosphorescent substance and the eyes are protected from all extraneous light. If this tube be then directed toward the excited Crookes' tube, which is giving the Röntgen rays, the phosphorescent paper in the tube glows, and the shadows of objects interposed between it and the Crookes' tube appear upon it. The advantage of this arrangement consists in its avoiding the experimental inconvenience of working in a dark room, and likewise the delays involved in the plan used by Röntgen. By this instrument the phenomena of the Röntgen rays can be most conveniently investigated. Its obvious applicability in diagnosis has led to my giving an account of it here. A more detailed account, with a report of cases in which it has been used, will appear in the March number of the *American Journal of the Medical Sciences*.

PRINCETON COLLEGE, Princeton, N. J., Feb. 7, 1896.

CORRESPONDENCE.

MONTREAL, Can., February 10.

[BY TELEGRAPH TO THE MEDICAL NEWS.]

I BEG to state that at the fortnightly meeting of the Medico-Chirurgical Society of Montreal, held on Friday night, February 7th, Prof. Cox of the science department of the McGill University, gave a demonstration of Professor Röntgen's cathode photographic methods, and exhibited photographs of a bullet in a man's leg. The patient had been shot in the leg some months ago, and in spite of every effort the surgeons were unable to locate the bullet. As the man was suffering a great deal, Prof. Cox undertook to discover it by cathode photography, and after developing the plate, the bullet was faintly seen between the tibia and fibula, from whence it will be an easy matter to remove it. Great interest was shown in the experiment, and nearly every member of our society was present as well as surgeons from Toronto and other cities who had been invited. The great value to surgery of this advance in science was fully recognized.

A. LAPTHORN SMITH, M.D.

ANTIVIVISECTION BILL IN CONGRESS— HEARING BEFORE THE COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

[SPECIAL CORRESPONDENCE TO THE MEDICAL NEWS.]

THE antivivisection scarecrow has suddenly come to life again at Washington, D. C., and the Humane Society of the District of Columbia has succeeded in having a bill introduced into both houses of Congress which calls for immediate attention from the scientific and medical professions in every quarter of this country. As it is very difficult to procure copies of this bill for distribution, owing to the limited edition printed under the present law,

the entire text of the bill in question is given here for the benefit of those whose active interest it should command.

Fifty-fourth Congress, First Session: { S. 1552.
H. R. 4446.

IN THE SENATE OF THE UNITED STATES.

JANUARY 14, 1896.

Mr. McMillan introduced the following bill; which was read twice and referred to the Committee on the District of Columbia

A BILL

FOR THE FURTHER PREVENTION OF CRUELTY TO ANIMALS IN THE DISTRICT OF COLUMBIA.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That hereafter no person shall perform on a living animal any experiment calculated to give pain to such animal, except subject to the restrictions hereinafter prescribed. Any person performing, or taking part in permitting, any experiment calculated to give pain, in contravention of this Act, shall be guilty of an offense against this Act, and shall, if it be the first offense, be liable to a penalty not exceeding one hundred and fifty dollars, and if it be the second or any subsequent offense, shall be liable, at the discretion of the court by which he is tried, to a penalty not exceeding three hundred dollars, or to imprisonment for a period not exceeding six months.

SEC. 2. That the following restrictions are imposed by this Act with respect to the performance on any living animal of an experiment calculated to give pain to such animal; that is to say:

(a) The experiment must be performed with a view to the advancement by new discovery of physiological knowledge, or of knowledge which will be useful for saving or prolonging life or alleviating suffering; and

(b) The experiment must be performed by a person holding such license from the Commissioners of the District of Columbia as is in this Act mentioned; and

(c) The animal must, during the whole of the experiment, be completely under the influence of ether or chloroform to prevent the animal feeling pain; and

(d) The animal must, if the pain is likely to continue after the effect of the anesthetic has ceased, or if any serious injury has been inflicted on the animal, be killed before it recovers from the influence of the anesthetic which has been administered; and

(e) No experiment shall be made upon any living creature, calculated to give pain to such creature, in any of the public schools of the District of Columbia; provided as follows, that is to say:

First. Experiments may be performed under the foregoing provisions as to the use of anesthetics by a person giving illustrations of lectures in medical schools, hospitals, or colleges, or elsewhere, on such certificate being given as in this act hereinafter mentioned, that the proposed experiments are absolutely necessary for the due instruction of the persons to whom such lectures are given, with a view to their acquiring physiological knowledge or knowledge which will be useful to them for saving or prolonging life or alleviating suffering;

Second. The substance known as urari or curare shall not, for the purposes of this Act, be deemed to be an anesthetic; and

Third. Notwithstanding anything in this Act contained, no experiment calculated to give pain "shall be performed on a dog or cat, except upon such certificate being given as in this Act mentioned, stating, in addition to the statements hereinbefore required to be made in such certificate, that for reasons specified in the certificate the object of the experiment will be necessarily frustrated unless it is performed on an animal similar in constitution and habits to a cat or dog, and no other animal is available for such experiment; and an experiment calculated to give pain shall not be performed on any horse, ass, or mule, except on such certificate being given as in this Act mentioned, that the object of the experiment will be necessarily frustrated unless it is performed on a horse, ass, or mule, and that no other animal is available for such purpose; and

Fourth. Any exhibition to the general public, whether admission be on payment of money or gratuitous, of experiments on living animals, calculated to give pain, shall be illegal.

Any person performing or aiding in performing such experiment shall be deemed to be guilty of an offense against this Act, and shall, if it be the first offense, be liable to a penalty not exceeding one hundred and fifty dollars, and if it be the second or any subsequent offense, shall be liable, at the discretion of the court by which he is tried, to a penalty not exceeding three hundred dollars or to imprisonment not exceeding six months; and any person publishing any notice of any such intended exhibition by advertisement in a newspaper, placard, or otherwise, shall be liable to a penalty not exceeding ten dollars.

A person punished for an offense under this section shall not for the same offense be punishable under any other section of this Act.

SEC. 3. That the Commissioners of the District may insert, as a condition of granting any license, a provision in such license that the place in which any such experiment is to be performed by the licensee is to be registered in such manner as the said Commissioners may from time to time by any general or special order direct: *Provided*, That every place for the performance of experiments for the purpose of instruction shall be approved by the said Commissioners, and shall be registered in such manner as the said Commissioners may from time to time by any general or special order direct.

SEC. 4. That the Commissioners of the District, upon application as hereinafter prescribed, may license any person whom they may think qualified to hold a license to perform experiments under this Act. A license granted by them may be for such time as they may think fit, and may be revoked by them on their being satisfied that such license ought to be revoked. There may be annexed to such license any condition which the said Commissioners may think expedient for the purpose of better carrying into effect the objects of this Act, but not inconsistent with the provisions thereof.

SEC. 5. That the Commissioners of the District may

direct any person performing experiments under this Act from time to time to make reports to them of the result of such experiments, in such form and with such details as the said Commissioners may require.

SEC. 6. That the Commissioners of the District shall cause all registered places to be from time to time visited by inspectors without previous notice, for the purpose of securing compliance with the provisions of this Act, and shall appoint and authorize an agent of the Washington Humane Society to make such inspection, and may also appoint such special inspectors as they may think fit, either permanently or temporarily, who may be willing to act as such inspectors gratuitously.

SEC. 7. That any application for a license under this Act, and for a certificate to be given as in this act mentioned, must be signed by three physicians duly licensed to practice and actually engaged in practicing medicine in the District of Columbia, and also by a professor of physiology, medicine, anatomy, medical jurisprudence, *materia medica*, or surgery in the medical department of any duly established and reliable school or college in the District of Columbia: *Provided*, That when any person applying for a certificate under this Act is himself one of the persons authorized to sign such a certificate, the signature of some other of such persons shall be substituted for the signature of the applicant.

A certificate under this section may be given for such time or for such series of experiments as the persons signing the certificate may think expedient.

A copy of any certificate under this section shall be forwarded by the applicant to the Commissioners of the District but shall not be available until one week after a copy has been so forwarded.

The Commissioners of the District may at any time disallow or suspend any certificate given under this section.

SEC. 8. That the powers conferred by this Act of granting a license or giving a certificate for the performance of an experiment on living animals may be exercised by an order in writing, under the hand of any judge of a court of record having criminal jurisdiction in the District, in a case where such judge is satisfied that it is essential for the purposes of justice in a criminal case to make such experiment.

This bill has been referred to the Senate and House Committees on the District of Columbia, composed of the following members:

SENATE COMMITTEE.

Hon. Jas. McMillan, Mich.	Hon. J. B. Wetmore, R. I.
" J. H. Gallinger, N. H.	" I. J. Harris, Tenn.
" H. C. Hansbrough, N. D.	" C. J. Faulkner, W. Va.
" Redfield Proctor, Vt.	" C. H. Gibson, Md.
" J. C. Pritchard, N. C.	" Jas. Smith, Jr., N. J.
" Lucien Baker, Kas.	" T. C. Martin, Va.
Hon. A. O. Bacon, Ga.	

HOUSE COMMITTEE.

Hon. Joseph W. Babcock, Wis.	Hon. Alfred Milnes, Mich.
" Alfred C. Harner, Penn.	" G. L. Wellington, Md.
" Geo. M. Curtis, Iowa.	" J. D. Richardson, Tenn.
" Geo. W. Hulick, Ohio.	" H. W. Rusk, Md.
" R. C. Schannon, N. Y.	" James E. Cobb, Ala.
" J. H. Huling, W. Va.	" E. E. Meredith, Va.
" B. B. Odell, Jr., N. Y.	" Jo Abbot, Texas.
Hon. Seth W. Cobb, Mo.	

In accordance with custom, both committees have referred the bill to the Commissioners of the District of Columbia for consideration, and at present it is in their hands.¹

The antivivisectionists, it is understood, applied for a private hearing before the commissioners, but the medical scientists of the district objected. Dr. Busey, as president of the District Medical Society, protested against any private hearings on the subject, and the Commissioners were thus led to appoint Thursday, January 30th, as the time for a general hearing.

The Humane Society was represented by its Antivivisection Committee, as follows: Mrs. C. Kennedy, Mrs. H. B. F. MacFarland, Mrs. H. V. Boynton, Mrs. W. Knowlton, Miss Peet, Gen. Rufus Saxton and Mr. MacFarland.¹ There were also present among the antivivisectionists: Rev. Dr. Power, Mrs. E. Totten, Gen. H. V. Boynton, Mr. W. Knowlton, and ex-Commissioner Douglass; and Dr. Leffingwell, of Cambridge, Mass.

The medical profession was represented by Drs. Busey, Magruder, and Kleinschmidt of the Committee on Legislation, District Medical Society; Surgeon General Sternberg and Dr. Walter Reed, of the U. S. Army; Dr. J. J. Kinyoun, of the U. S. Marine Hospital Service; Dr. D. E. Salmon, chief of the U. S. Bureau of Animal Industry, with his assistant chief, Dr. Brumbaugh, his bio-chemist, Dr. de Schneinitz, his pathologist, Dr. Moore, his medical zoologist, Dr. Stiles, and Dr. Schroeder, director of the experiment station; Health Officer Woodward, Dr. G. Wythe Cook, Dr. Sowers and others.

Mr. Kennedy opened the discussion by reading the bill, after which he stated that there is no law at present in the United States regulating or prohibiting vivisection except in Massachusetts, where a law exists controlling experiments upon animals in the public schools. He then read extracts from the Report of the English Commission on Vivisection of 1876, and spoke of the brutalities practiced by scientists.

Mr. Ross Perry, one of the ablest lawyers of Washington, then followed with a lengthy address, which was evidently intended to be in support of the bill. Some of Mr. Perry's remarks are worthy of a moment's attention, coming from such a well-known man, and being so radical and hysterical in their character. They were received by the agitators with delight, and will undoubtedly be used by them hereafter in their pamphlets.

He claimed in the most radical manner that the end attained did not justify the means used; that knowledge purchased at the price of sufferings of animals was purchased too high.

Dr. Busey was the first to speak against the bill. He remarked in a quiet, sarcastic manner, that he appeared before the Commissioners expecting to hear a discussion on the subject of vivisection, but as a matter of fact he had only heard long addresses in which the medical profession had been attacked as inhumane and brutal, and as liable to finally end by vivisecting idiots and criminals. He then directed attention to sections 2 and 6 of the bill

which he claimed made the bill *prohibitory*, instead of regulating the practice.

At this junction the antivivisectionists showed that they intended to interrupt him as frequently as possibly and thus try to gain time and points. Mr. Kennedy was the first to institute these tactics, but Dr. Busey soon succeeded in bringing him to silence.

Dr. Busey brought forward an array of facts in favor of vivisection which was evidently a surprise to the opposite party, and which came directly home to the women present by referring to the practical application of transfusion of blood in its relation to flooding after delivery, etc.

Surgeon-General Sternberg was the next speaker for the scientists, but, by request, he ceded the floor to Dr. Leffingwell, of Cambridge, Mass, whose time in Washington was limited. The antivivisectionists evidently were disappointed by the remarks of the Doctor, for he practically killed the bill for them, so far as the Commissioners are concerned. He admitted Dr. Busey's statements regarding the value of vivisection in science, and stated that if it were a question between vivisection and antivivisection, he would stand by vivisection. He desired to see vivisection restricted, but admitted that the bill under discussion was not satisfactory to this end.

Commissioner Truesdell then suggested that Dr. Leffingwell submit in writing for consideration of the Commissioners any suggestions he had to make, and the floor was given to General Sternberg.

As soon as General Sternberg began to speak, the antivivisectionists resumed their tactics of interruption, one after another propounding questions or making statements calculated to lead the speaker away from his train of thought.

The discussion here became stormy in the extreme, and the constant interruptions so exasperating that Dr. Salmon protested against their continuance. After this, Dr. Sternberg was able to finish his remarks in comparative quiet.

About three hours had been occupied by the hearing, and when time for adjournment had arrived, only two of the opponents had had an opportunity to speak. The bill is still in the hands of the Commissioners, who will refer it back to the Congressional Committees for report to Congress.

Several important matters come up in connection with this bill in Congress: *First*.—Is not this the beginning of a concerted action on the part of the antivivisectionists in various parts of the country? The importation of Dr. Leffingwell from Cambridge gives some plausibility to this view. *Second*.—If such is really the case, is it not time for the scientific and medical men of the country to be on their guard in the various States, to see that no State legislature passes any bill which will seriously compromise scientific research? But if there is no organized movement of this nature, this bill, even if reported to the two houses, may be followed by serious results, for fanatics will be encouraged by the apparent "importance" of their movement, and we may look for the introduction of extreme measures in many of the State legislatures.

¹ Names are taken from the *Washington Times*, January 31st.

OBITUARY.

DR. JAMES EDMUND REEVES died at Chattanooga, Tenn., on January 4th, in his 67th year. He had been ill for a relatively short time with some obscure affection of the liver. Dr. Reeves was born in Annisville, Va., and after an apprenticeship in the office of his preceptors, he began at the age of 21 the practice of medicine in Sutton, W. Va. A year later he took a course of lectures at Hampden Sydney Medical College, of Richmond. Nearly ten years later he took a second course of lectures in the Medical Department of the University of Pennsylvania.

While a resident of Wheeling, W. Va., he agitated the subject of municipal hygiene and secured the passage of an ordinance establishing a city health department. In 1869 he was elected city health officer and county physician, and continued in office for four years. Subsequently he served as a member of City Council for four years. He was the author of a law creating the State Board of Health of West Virginia, of which he was a member, and for five years the secretary. For about the last six years he lived at Chattanooga.

Dr. Reeves was one of the founders of the American Public Health Association, and its president in 1885. In 1867 he issued a call for the organization of the State Medical Society of West Virginia, whose first secretary he was, and in 1881 its president. He was a member of the Executive Committee for West Virginia, of the International Medical Congress, held at Philadelphia in 1876. In 1882 he was elected a member of the Judicial Council, and in 1895 a trustee of the American Medical Association, and a member of the Association of American Physicians. He was one of the vice-presidents of the section of Public and International Hygiene of the International Medical Congress, held at Washington in 1887; vice-president of the American Microscopical Society in 1886; a member of the Advisory Council of the Pan-American Medical Congress, held at Washington in 1893. He was employed by the State Board of Health of Tennessee to make sanitary inspections of the State's defences against yellow fever during the Jacksonville epidemic of 1888.

In addition to numerous journal articles Dr. Reeves was the author of "A Practical Treatise on Enteric Fever," and a "Manual of Medical Microscopy for Students, Physicians and Surgeons."

The last signal service rendered the medical profession by Dr. Reeves was his brave and successful fight against quackery in the special form of a "consumption-cure." As is well known to the readers of the NEWS, Dr. Reeves was sued for libel, but the jury, before which the case was tried, brought in a verdict in his favor ten minutes after the evidence had all been in, the closing speeches made, and the judge's instructions given. To the credit of the profession, the expenses of this suit, on the part of Dr. Reeves, were made good by voluntary contributions by a considerable number of physicians.

Dr. Reeves was the type of man that the profession can ill afford to lose—broad-minded, progressive and aggressive, rigidly honest and ethical. The profession of medicine is nobler than he has lived.

REVIEWS.

CATARRHAL DISEASES OF THE RESPIRATORY PASSAGES. CARTER. Pp. 135. Chicago: E. H. Colegrove & Co., 1895.

It is difficult to properly characterize the series of fourteen papers contained in the book, or to determine the purpose of their publication. At any rate, undue prominence has been accorded lake winds and ozone in the etiology of tonsillitis. The author thinks that in cases of "catarrhal sore throat" the inhalation of menthol produces better results in damp than in dry weather. The chapter on the distribution of croup, bronchitis, etc., contains many interesting facts, and is responsible for the presence of Burmah, Dutch Guiana, and Zululand in the very complete index. Venezuela has for some cause been omitted. The extensive bibliography at the end of the book is doubtless valuable, but has its defects. Parkes' *Hygiene* and the MEDICAL NEWS are both mentioned, but are not visibly connected with any statement made by the author.

DIE LEHRE VON DEN NASENEITERUNGEN. GRUNWALD. Zweite gänlich umgearbeitete Auflage. S. IX. u. 283. München: J. F. Lehmann, 1896.

WHEN Grünwald published in 1892 the first edition of his monograph upon the pus-producing affections of the nose and accessory sinuses, it was generally conceded to be the most important contribution to rhinology of the year. There was so much that was valuable and stimulating, and so many subjects looked at in a new light, that some of us wondered whether all that the author said could be true. Grünwald's originality of treatment is perhaps best displayed in his discussion of "Ozena." His clear-cut convictions are not very moderately expressed, notwithstanding the fact that they contradict generally accepted theories. A second notable section of the work is that devoted to empyema of the sphenoidal sinuses, of which thirty-seven chronic cases are reported by the author. Although there is a markedly polemical complexion to many portions of the book, it is in an even greater measure rich in instructive clinical data, and while we cannot subscribe to everything contained in the work, we shall, at any rate, be constrained to perfect ourselves in the diagnosis and treatment of the somewhat obscure and elusive affections therein discussed.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM JANUARY 14, 1896, TO FEBRUARY 3, 1896.

1st Lieutenant James M. Kennedy, Assistant Surgeon, is relieved from duty at Camp Merritt, Montana, to take effect upon the expiration of his present leave of absence, and ordered to Fort Missoula, Mon., for duty.

The leave of absence granted Captain James D. Glennan, Assistant Surgeon, is extended one month.

Leave of absence for one month, on surgeon's certificate of disability, with permission to apply for an extension, is granted Captain Benjamin Munday, Assistant Surgeon.

First Lieutenant Willian H. Wilson, Assistant Surgeon, is relieved from duty at Fort Leavenworth, Kansas, and ordered to Fort Bayard, New Mexico, for duty at that post.